This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

THE

SANITARIAN,

A MONTHLY MAGAZINE

DEVOTED TO THE

PRESERVATION OF HEALTH, MENTAL AND PHYSICAL CULTURE.

A. N. BELL, A.M., M.D., Editor,

T. P. CORBALLY, A.M., M.D., Associate Editor.

NEW YORK: A. N. BELL, M.D.

1880.

Entered according to Act of Congress, A. D. 1850, by A. N. BELL, in the office of the Librarian of Congress, at Washington.

THE SANITARIAN.

A MONTHLY MAGAZINE.

Vol. VIII. JANUARY, 1880. No. 8-1

PROCEEDINGS OF THE AMERICAN PUBLIC HEALTH ASSOCIATION.

NASHVILLE, TENN., NOVEMBER 18–21, 1879.

(*Continued from page* 559, *Vol.* 7.)

THE NATIONAL BOARD OF HEALTH—ANNUAL ADDRESS BY PROF. J. L. CABELL, M.D., PRESIDENT.

President Cabell said:

Gentlemen of the Public Health Association: In executing the duty of briefly noticing the most conspicuous events relating to the interests of the public health which have occurred since our last annual meeting, it is a source of great gratification that I am permitted to congratulate you on the partial realization of the hopes which have inspired and directed our common efforts since the original organization of this body, and especially since the outbreak of the great American epidemic of 1878. I allude, of course, to the auspicious fact that the National Legislature has at length distinctly recognized the necessity of an adequate provision by law for the care of the public health by the establishment of a National Board of Health, provisional at first, but doubtless soon to be made permanent in a perfected organization.

The deeply tragical events of the previous summer had caused an unusual degree of interest to be manifested by the public at large with regard to the proceedings of the Association at its last annual meeting in Richmond. While it is undeniable that we are mainly indebted to the profound impression produced by these events for the readiness with which the two houses of Congress entered upon measures of sanitary legislation, we may yet, without unbecoming self-laudation, claim for this body the credit of having the sagacity to perceive and the energy to utilize the opportunity that offered for initiating measures which looked to the probable consummation of its hopes in the inauguration of a system of sanitary legislation, which should therefore become a permanent feature in the civil administration of Government, State and National, aiming thereby to make the epi-

demic of 1878 achieve for the cause of State medicine in the United States what the cholera epidemic in England had done for that country not many years ago.

It will be remembered by those who attended the Richmond meeting of the Association, that all its proceedings indicated a prevailing impression that the time had arrived for immediate and earnest efforts to secure effective sanitary legislation, both by separate States and by the General Government. Numerous resolutions foreshadowing some such result as an event near at hand, were referred to your Executive Committee, who were to have the aid and counsel of a special advisory committee, composed of one member from each State represented in the Association, and a representative from each of the three branches of the National Medical Service, together with the Commissioner of Education. This committee was charged with the duty of advising with the Executive Committee, with regard to such matters of legislation coming before Congress at the then ensuing session, as might relate to subjects of public health, and the Executive Committee was expressly instructed to exert its influence to secure such legislation as would best protect the public health of the whole country. The two committees met in conference Jan. 2 and 3, and, after careful deliberation, certain conclusions were adopted by the unanimous vote of all present, and they were subsequently indorsed by all or nearly all the absent members of both committees. These conclusions were embodied in a printed "memorandum," of which a copy was sent to every member of both houses of Congress, and to every member of the Association.

Just here let me say that I should do violence to my sense of justice if I did not bear public and emphatic testimony to the important services rendered in this connection by the First Vice President of the Association, Dr. J. S. Billings, to whom mainly is due the credit of planning and formulating the several propositions, and subsequently of bearing the largest share of the burden of the practical work needed to carry them into effect. No language of mine could exaggerate my sense of the value of those services, or of the obligations he has laid upon all who desire to advance State medicine in our country.

The memorandum in question did not meet with unqualified approval outside of the committee by whom it was finally adopted. Elsewhere it was objected by some that it was unwise and impolitic to inform Congress that there was danger of premature and unsatisfactory legislation from want of proper and sufficient information, and equally so to ask Congress to delegate to an extra-governmental body, such as the Academy of Science, the power of designating the members of a Provisional National Health Commission. It should be remembered, however, that existing facts fully warranted the apprehension of danger as to rash legislation, and that in the sequel it appeared that the frank avowal of these fears by the authorized representatives of this Association had a manifest effect upon the members of the National Legislature. It was owing to this position of the committee, as I happen to know, that several members of Congress were induced to withhold their consent to ill-advised measures, by which it was proposed to confide the whole subject of quarantine,

along with other autocratic powers, to the sole discretion of a single Director-General of Health.

The other objection proved to have more force; not, indeed, as directed against the intrinsic merits of the proposition to withdraw the power of designating the membership of the proposed commission from politicians, whether in the Legislative or Executive Departments of the Government, for such a proposition needs only to be announced to command general approval, but it was decided by competent authority that Congress could not legitimately delegate to any body of men outside of the Government the right to appoint the members of a commission to be created by an act of the National Legislature. There were perhaps some other objections of minor significance, which were refuted by the progress of events, and need not now be repeated.

Besides the recommendation for the appointment of a provisional Sanitary Commission which should be charged with the duty of reporting to the next Congress a plan for a permanent health association, and one for a national quarantine system, and also with the duty of making investigations into the causes and means of prevention of yellow fever or other epidemic diseases which might be referred to it by Congress, selecting experts for that purpose as far as might be necessary, the memorandum insisted upon the necessity of a proper organization of State and local Boards of Health, and alluded to a possible mode of paying a part of their expenses, which, as the germ of a principle, subsequently attempted to be incorporated in the act of Congress establishing the National Board of Health, which attempt failed simply from a clerical error, deserves to be specially noted. Pardon me for citing the section of the memorandum to which I allude:

"XI. We are entirely convinced that the future of public hygiene in this country depends mainly upon the proper organization of State and local boards of health, and upon such recognition of their importance and utility by the people and their legislators, that the necessary means and powers shall be granted to them to enable them properly to perform their duties. We believe that the General Government can do much to stimulate and encourage the formation of such boards, and that an important part of the duty of the Provisional National Health Commmission, which we have recommended, will be to point out what can best be done to forward this object.

"Such boards can do good work, not only for their own locality, but for the nation, *and if the nation will pay for this work*, it will be most cheerfully done, especially if a proper central health organization be arrived at, with which they can co-operate, as we hope and believe will be the case if the plan we have suggested be carried out."

In strict conformity with the views enunciated in the "memorandum" a bill was drafted and submitted to Senator Withers and the Hon. John Goode, of Virginia, who were expected to introduce it in their respective branches of Congress. After a careful examination of the bill as proposed, these gentlemen expressed grave doubts as to the power of Congress to delegate to the Academy of Science the authority to select the members of the proposed commission, and it was ultimately decided to dispense with the interme-

diate agency of a provisional sanitary commission and to assign directly to the National Academy itself the duty of reporting to Congress at its next session a plan for a national health organization. To this end a very short bill was introduced by Senator Withers and appropriately referred. This encountered some unfavorable criticism of a portion of the medical press of the country, on the alleged ground that it involved an abdication of the rights of sanitarians and remitted to a body of naturalists the decision of grave and important questions relating to the public health of the nation. A simple statement of the fact that sanitary science was represented in the Academy by some of its ablest votaries in this country, and that when, in accordance with requirements of the charter, the Academy is called upon by any department of Government "to investigate, examine, experiment, and report upon any subject of science or art," it is usual to refer the particular subjects to a committee composed of experts in that subject, sufficed to disarm the criticisms of all show of significance, and to produce silent if not cheerful acquiescence. The bill in question was, however, strangled in the committee, who reported a quarantine bill of Senator Harris, which passed the Senate but failed in the lower House during the last days of the session, when the McGowan bill was introduced and rapidly passed both houses, and, being approved by the President, became the constituting act, under which the present National Board of Health was organized. As it passed the House of Representatives, where it originated, it contained the following important clause in section 2:

"It shall also aid in the work of State Boards of Health, and of State and municipal authorities, by such means and to such an extent as may seem to it necessary and desirable. And for this purpose it is authorized to pay a certain portion of the expenses of such State Boards of Health or quarantine authorities at its discretion. *Provided* that the amount so paid shall in no case exceed one-half the total expenses for any such Board or quarantine authority. *And provided further*, that such reports and information as may be required by the National Board of Health shall be furnished by the State Boards and quarantine authorities so aided."

To carry out the purpose expressed in the foregoing clause, provision was made in section 4, by appropriating the sum of $500,000.

This idea of assisting the State Boards of Health by paying one-half of their expenses (on certain conditions) was derived from the practice of the Local Government Board in England, which, as the Central Health Authority, is charged, among other things, with the distribution of funds appropriated by Parliament for sanitary uses, and which, in the execution of this duty, assumes with reference to certain outlays for sanitation a moiety of the expenses incurred by the local authorities. The operation of this principle in that country has been attended with the happiest results, and the fact is worthy of our study and imitation. Allusion will again be made to it.

The clause in question having been omitted by the copying clerk, through an error for which he was not alone to blame, the act, as approved, contained only an appropriation of $50,000 to pay the salaries and expenses of the Board, who were directed to obtain information upon all matters affecting the public health, to advise the sev-

eral departments of Government, the Executives of the several States and the Commissioners of the District of Columbia on all questions submitted to them, or whenever, in the opinion of the Board, such advice may tend to the preservation and improvement of the public health; and, also, with the assistance of the National Academy, to report to Congress at its next session a full statement of its transactions, together with a plan for a national health organization, after consultation with the leading sanitary organizations and sanitarians of the country.

In compliance with the direction to obtain information upon all matters affecting the public health, the Board has set on foot a number of investigations by skilled experts, of which a summary enumeration will be found in its quarterly report to the Secretary of the Treasury, as published in the Bulletin, No. 17. I may be allowed to refer more particularly to one or two of these investigations.

And, first, as to the work of the Havana Commission, composed of Dr. S. E. Chaillé and Col. L. S. Hardee, C.E., of New Orleans; Dr. John Guiteras, of Philadelphia, and Surgeon G. M. Sternberg, United States Army, who were instructed—

1. To ascertain the actual sanitary condition of the principal ports in Cuba, from which shipments are made to the United States; to determine how their sanitary condition can be made satisfactory, and especially to determine what can be done to prevent the infection of the shipping at these ports by yellow fever.

2. To obtain information with regard to the condition which may be supposed to determine the endemicity of yellow fever in the ports of Cuba.

3. Another desideratum was to increase existing knowledge as to the pathology of yellow fever.

4. The Commission was further instructed to endeavor to find some means of recognizing the presence of the immediate cause of yellow fever other than the production of the disease in the human subject.

The first two divisions of the general subject were undertaken by a committee consisting of Dr. Chaillé and Col. Hardee, who have collected a vast amount of valuable information from not less than forty-five places in the island, including the fifteen ports of entry, several of which, in addition to the principal ports of Havana and Matanzas, were visited in person by Dr. Chaillé. Most of this information, though highly important, is more of a commercial than a scientific nature. It was ascertained that the disease has prevailed in Havana every year since 1761, and it is alleged that it was imported from Vera Cruz. This endemic prevalence was ascertained to be more marked in towns which have the largest unacclimated population, where the houses are crowded together, densely inhabited and badly ventilated, and where much filth exists. The actual sanitary condition of these towns was correspondently bad, as exhibited by the high death rate of from 40 to 50 per 1,000 of the population.

In relation to the shipping, Dr. Chaillé satisfied himself that the poison did not originate in them, but was brought from the shore, and avers that the facts to be given in his report will bear him out in this assertion. He cites, among other evidence, the fact that while

yellow fever constantly prevails in the port of Cardenas, the shipping is almost entirely exempt from infection ; which he ascribes, in part, to the large size of the harbor and its excellent ventilation, and in part to the fact that the anchorage is at some distance from the shore.

Finding that the provisions of the act of June 2d, 1879, for securing the best sanitary condition of vessels in the ports of Cuba, destined for the United States, could not be enforced effectually without the consent and aid of Cuban authorities, and that this has been withheld, he recommends an attempt to attain our object by means of an international code, to be agreed upon by all the maritime powers interested in this matter. Dr. Chaillé's preliminary report, now ready for transmission to Congress, will be about forty printed octavo pages, and his final report, which will be very much more elaborate, will require several months for its publication.

The pathological investigations were confided to Dr. George M. Sternberg, of the army, and Dr. John Giuteras, of Philadelphia. Numerous autopsies and dissections were made, and tissues, obtained directly after death, were at once put up in suitable preservative liquids and brought to the United States for thorough and careful study. This investigation will be carried on under the personal supervision of Dr. J. J. Woodward, the eminent pathologist of the Army Medical Museum, who has been requested to present a special report upon the subject.

The pathological histology of the blood of yellow fever patients was the subject of very earnest and patient study by Dr. Sternberg, with the result of discovering a constant lesion of the white corpuscles, which, however, with a proper reserve, he hesitates to announce as peculiar to yellow fever until he shall have had an opportunity of extending his observations to other fevers and allied affections. He is now, and will for some time be, engaged in making parallel observations on the blood of persons suffering from various diseases—especially febrile diseases. The lesion in question is a fatty degeneration of the white corpuscules not heretofore described, and is well exhibited in his numerous and beautifully executed micro-photographs of the blood of yellow fever patients. His careful observations with the best instruments determined no other positive fact which was new to science ; but they have an important negative value in disproving the assertions of other observers. Dr. Sternberg has also photographed certain crystalline bodies in the air, taken from various localities in Havana, notably in the wards of the military hospitals, under and above the beds of yellow fever patients, which he is now investigating in the same manner by comparison with the forms found in the air of hospitals and other places in various parts of the United States. If it be found that these crystals have not heretofore been described, and that they are peculiar to the air of places infected with yellow fever, the observation will be an interesting acquisition to science, and may possibly lead to valuable results.

In directing the Commission to endeavor to find some means of recognizing the presence of the immediate cause of yellow fever, other than the production of the disease in the human subject, the Board was well aware that the problem of finding such a physiological

test of the yellow fever poison, with a view to its isolation and identification in any case, and to its propagation by culture experiments, if it should prove to be a *contagium vivum*, might, and probably would, be found to be insoluble. Nevertheless, it was considered proper to authorize and instruct the Commission to institute such experiments as have resulted in valuable discoveries when applied to some other infectious diseases—notably the splenic fever, shown by Koch to be caused by *bacillus anthracis*—a fact which has received of late a striking confirmation in the history of the Loodiana fever, which, as stated by Sir Joseph Hooker, President of the Royal Society, has been so fatal to horses in the East. He states that dried blood of horses that had died of the disease in India, has been recently sent to the Brown Institute, and from seeds therein contained a crop of *bacillas anthracis* has been grown which justified its distant pathological origin by reproducing the disease in other animals. Other experiments have shown that the grains which are so largely used as food for cattle, afford a soil which is peculiarly favorable for the development and growth of the spore filaments of *bacillus*, and that by such grains, when infected, the *anthrax* fever can be produced at will under conditions so simple that they must often arise accidentally ; so, in the report of the medical officer of the Local Government Board for 1877, we have a detailed account of Dr. Klein's positive demonstration of a special *contagium vivum* in the case of the infectious *pneumoenteritis* of the pig (or pig typhoid), the disease being produced in repeated experiments by inoculating healthy animals (pigs and mice) with microphytes which had been raised in culture experiments through seven or eight generations.

Thus far the results obtained by the Havana Commission in investigations of this kind, have been purely negative. Every attempt to communicate the disease to animals, more than a dozen species being tried, completely failed.

Among the results of the work of this Commission, which gives promise of future benefits, may be mentioned the manifest and freely-acknowledged influence which it exercised upon the Government and medical profession of Cuba, in arousing them to a lively interest in the etiology and prevention of yellow fever. The Cuban authorities were at once prompted to appoint an auxiliary commission to aid ours, and has since made this auxiliary commission a permanent one.

The second step taken by the Board with reference to its required duty to obtain information upon all matters affecting the public health, was to instruct the Standing Committee on State and Municipal Sanitary Legislation to collect and collate the sanitary laws of the several States, including not only the statutes, but the decisions of the courts on questions involving public hygiene. This important work has been conducted by a competent member of the bar in Boston, R. C. Lincoln, Esq., under the direction of Dr. Bowditch, chairman of the Standing Committee.

Thus it is believed that the book will contain every decision and case in the State and United States reports which considers in any degree either a general or a special sanitary law or act; or any subject or matter of health not made a matter of specific legislation, and the aim will be to make the abstracts so full, by embodying not only the

legal point, but the essential part of the facts of the case, and the act or by-law involved therein, as to make it unnecessary to go to the original reports. There will be a full index at the end of the book, so that, by means of that index, and a methodical arrangement of the text, any sanitary subject which has ever been before the courts can very readily be found. No comment of mine can be needed to indicate the great value of such a work.

Disinfection, or the destruction of the poisons of infectious or contagious disease, must, by the very terms of the definition, provided such definition be warranted by facts, be an efficient agency in the prevention of the spread of such diseases. It is, therefore, of the utmost practical importance to ascertain what agents, with such pretensions, are really effective, and which of the various proprietary combinations may be relied on for efficiency and reasonable economy. To this end, the National Board, at an early period, took measures to have such inquiries carried out by the most competent experts in the country. As stated in No. 17 of the *Bulletin*, there was work in this connection for three commissions of experts. The first was directed to inquire and report as to the intimate nature of the process of disinfection under varying circumstances ; the second was to prepare a report upon the best disinfectants for popular use, with instructions how to use them, given in such a popular form as to be readily intelligible to common people. This report was printed by the Board as Circular No. 8, and was widely distributed, especially in the cities and towns of regions likely to be invaded by the yellow fever. The third was to determine the value of such proprietary disinfectants as were submitted to the Board.

This investigation was kindly undertaken at the Laboratory of the School of Mines, Columbia College, N. Y., by Prof. C. F. Chandler, Ph.D., and Elwyn Waller, Ph.D. The first installment of their reports is published in the number of the *Bulletin* just mentioned (No. 17), and effectually disposes of the pretensions of some of these proprietary disinfectants.

The investigation first specified, that, namely, which relates to the effects of disinfecting agents upon the causes of the infectious diseases, or the intimate nature of the process of disinfection, is one of incalculable importance, both in its scientific and its practical aspects, and has been undertaken, under the general direction of Dr. G. F. Folsom, by Dr. W. S. Bigelow, of Boston, assisted by Dr. H. P. Bowditch, Professor of Physiology, and Dr. Wood, Professor of Chemistry, of Harvard University.

In this connection I may be permitted to allude to an episode in the official history of the Board, which occurred during the earliest weeks of its existence, and which has been misunderstood by some, misrepresented by others, and, by certain interested parties, made the occasion of an attempt to cast obloquy on the Board. I refer to the action taken by the Board in the matter of Prof. Gamgee's plan of a so-called refrigerating ship "to disinfect vessels and cargoes from ports suspected of infection with yellow fever or other contagious diseases."

The idea of resorting to cold artificially produced, as a means of destroying the germ of yellow fever, is not an altogether novel propo-

sition. The fact that the first white frost puts an end to yellow fever epidemics had several years ago led to the suggestion of disinfecting limited places and articles contained in them by artificial cold.

Dr. J. C. Fager, of New Orleans, in 1864, premising his suggestion with the remark that "*Art* never can do better than to imitate nature," announced that the "lowering of the temperatures in the holds of ships, which have to be purified, should be tried."

In the report of the Board of Experts it is stated that "the yellow fever poison is not able to withstand the influence of frost, and when exposed to a freezing temperature it is rendered innocuous, and is probably destroyed. * * * If the apparatus and experiments now projected for the utilization of extreme cold to this purpose should be found to be of practical application to the disinfection of the holds and other parts of vessels, their success would prove to be a sanitary acquisition of inestimable value."

A short time before the organization of the National Board of Health a bill had been introduced into Congress for the construction of a refrigerating ship, authorizing the Secretary of the Treasury to contract with John Gamgee for the same. When this measure was undergoing consideration by the Senate Committee on Epidemic Diseases, Senator Harris, of Tennessee, as chairman of the committee, addressed a communication to the three medical officers who had been detailed to represent their respective services in the newly established but not yet organized National Board of Health, and requested an expression of their opinion as to the merits of Prof. Gamgee's proposed refrigerating steam-vessel as a means of disinfecting vessels and their cargoes. In their reply, dated March 27, 1879, they make the following, among other statements:

"5. Whether the production of a temperature, even as low as zero, in a ship for a comparatively short period of time, *id est*, for a few hours, will destroy or render permanently harmless the yellow fever poison, we do not know, there being not satisfactory evidence in existence upon this point. But, from what is known as to the effects of temperature upon this disease, we are of opinion that the experiment is worth trying.

"6. It will be seen that we consider the project as an experiment; it is, in fact, impossible to view it otherwise. But even in the case of failure, the results can hardly fail to be of considerable scientific value, while in case of success the cost would be a comparative trifle."

Such was the posture of the question when the Board of Health was organized and went into operation, in the first week of April, and at an early stage of its proceedings substantially indorsed the conclusions announced in the communication of the three medical officers to the chairman of the Senate committee, with this additional argument in favor of the expediency of making the experiment—that whatever might be the issue of that experiment, as to the complete destruction of the poison, it would almost certainly render it safe for even unacclimated persons to assist in discharging the cargo of an infected ship. About this time, too, the draft of the original bill was so changed as to omit Prof. Gamgee's name and to require the Secretary of the Treasury to contract for the purchase or con-

struction of such steam-vessel and refrigerating machinery, or to arrange with the Navy Department for the use of such vessel as may be recommended by the National Board of Health to disinfect vessels and cargoes from ports suspected of infection with yellow fever or other contagious diseases, the construction of the same, if such construction shall be recommended by said Board of Health, to be under the inspection of an officer of steam engineering of the navy, who may, at the request of the Secretary of the Treasury, be detailed by the Secretary of the Navy for that purpose, etc." This bill passed both Houses of Congress and was approved April 18, 1879. Shortly thereafter, several parties submitted plans and specifications for the work in question, and the Board of Health requested the Secretary of the Navy to convene a board of experts skilled in naval engineering and ship construction to examine and report upon these competing plans. This was courteously granted, and a board consisting of Mr. David Smith, Chief Engineer of the Navy, two passed assistant engineers and a naval constructor was appointed May 2, and at once proceeded to the discharge of its duties. After six weeks of close and searching scrutiny this board made an elaborate report of sixty-two foolscap pages, in which the scientific principles involved in the construction and working of both vessels and machinery were exhaustively discussed.

After describing each plan and noticing the bearing of the principles of thermo-dynamics and of ship construction in their application to each, the report stated that "after a close study of the problem to be solved, and a careful examination of all the plans presented, the board find that the plans submitted by John Gamgee show the most thorough and intelligent consideration of the subject, and promise to do the required work most efficiently and economically."

It is true that a few changes relating to matters of detail were recommended, but the emphatic indorsement of the general plan and the express and positive rejection of every competing plan made it the duty of the board to recommend Prof. Gamgee's scheme to the Secretary of the Treasury. On application to Prof. Gamgee for his papers it was found that he was unwilling to submit his plan and disclose his discoveries and inventions to rival inventors, who might, if the work was offered to the lowest bidder for execution, undertake the job, and, either from incompetence or other causes, jeopard the success of the scheme. He contended that the vessel and the refrigerating machinery should be constructed together; that they involved an almost continuous succession of scientific inventions which were his own property, and which were, to some extent, to be perfected as the work advanced, and which could not be provided for in a specific contract, such as is usually entered into by machinists and shipbuilders.

The Board of Health being, therefore, of opinion that the success of the experiment would largely depend upon its execution being confided in all its parts to those who had conceived and designed it, allowing a reasonable latitude in matters of detail for such modifications as might be suggested in the course of the work, deemed it expedient to advise the Secretary of the Treasury to make the contract with the inventor of the plan which had been so strongly recommended by

the board of naval experts. But the Secretary in a personal interview with the Executive Committee announced as his construction of his duty that he was not authorized to make a contract otherwise than is provided for in the Revised Statutes, namely, by advertising the plans and specifications and offering the work to the lowest responsible bidder. Prof. Gamgee having positively refused to permit his plans to be thus used, and the Naval Board having discredited every other plan, the National Board of Health considered that it had discharged its duty and had nothing further to do in the premises, except in compliance with a special order of Congress, communicated through the Secretary of the Treasury, to report to that body all its proceedings so far as they related to this matter.

The resentful spirit manifested by rival parties, whose plans had been unfavorably criticised by the Board of Experts, might have been expected, and very naturally sought ways of expression; but there was less excuse for some others who had at first approved the proposed experiment, and subsequently, under the pressure of an apparent adverse popular sentiment, based upon the supposed significance of the case of the United States ship Plymouth, indulged in unfriendly criticisms of the action of the Board. I do not know what may be the present views of the members of the Board; for the subject has not been officially before the Board since the date of the events I have briefly narrated; but for myself, I am free to say that in my judgment the affair of the Plymouth as reported by a naval commission has not decided the question under consideration, and that having placed on record my vote, as one of the Board in favor of the expediency of making the experiment by means of Prof. Gamgee's plan, I am of the same opinion still, and, therefore, regret that untoward circumstances have prevented the application of the experimental test. I will only add in further vindication of the propriety of the action taken by the Board that refrigeration was only a part, and but a very small part of the appliances to be put into requisition by Prof. Gamgee's plan. In a communication which he addressed to the Board, April 22, nearly two months before the latter was called upon for its final decision on receiving the reports of the naval experts, Prof. Gamgee had stated that in addition to refrigeration he proposed to provide the following means:

"*a.* Deliquescent chlorides, and especially the chloride of magnesium, to remove from the air all molecular matter and moisture. The air will be then rendered *absolutely* and *optically* pure, etc.

"*b.* A close chamber, to be raised to any desired temperature for disinfecting purposes, to purify clothing, etc.

"*c.* An entirely new system of temporarily substituting for the air of a ship antiseptic gases, measured, weighed and introduced as liquids in the most inaccessible parts, and which, passing spontaneously from the state of liquid to that of gas, will permeate everywhere, and, if necessary, be made to penetrate under pressure.

"*d.* Electrical apparatus for lighting and safely inspecting every part of an infected vessel. * *

"*e.* Medicated or disinfecting baths, or chamber in which convalescent people or persons exposed to contagion may be purified before landing.

"*g.* Apparatus for superheating and with an entirely novel method of regulating superheated steam, if ever used in disinfecting a ship which has been stripped for the purpose, as to maintain safe temperatures and preventing firing or other inconvenience."

It was such a combination of instrumentalities and not simply a refrigerating machine, that the National Board of Health recommended, and that, too, avowedly, as an experiment, in respect of this alleged capacity of being brought to bear upon vessels lying in quarantine. There could be scarcely a question as to the value of some or all of these agencies if they could be applied, efficiently and at a reasonable cost, and this, already rendered probable by the recorded opinions of competent experts, was to be tested by the proposed experiment.

I refer you to the *Bulletin* for a summary statement of the other subjects of investigation which have engaged the attention of the Board while acting under the provisions of the constituting act.

Before the President of the United States had appointed the members of the Board of Health, as established by that act, the two houses of Congress had been convened in extra session, and a bill (S. 180) for a National quarantine had been introduced and appropriately referred. When, a few weeks later, the Board was duly organized, the bill in question was referred to it for criticism and suggestions.

In the earlier communications with the Chairman of the Senate Committee, the Board was disposed to adhere to the views recommended by your committees, and suggested that there should be no further legislation at the then existing extra session of Congress than to appropriate funds to enable the Board to aid State and local boards of health, as provided for in the McGowan bill before it had been shorn of an important clause which had actually passed the House of Representatives; but owing to a clerical error did not go the Senate. To meet the supposed urgent wants of the approaching season, and to satisfy Southern members of Congress whose disastrous experience of previous summers had led them to cling to the idea of a rigid quarantine as the only hope of averting a renewed importation of the yellow fever, it was proposed not only as in the original clause to specify quarantine authorities, as joint recipients of the bounty of the General Government to be distributed through the agency of the National Board, but also to omit the provision which imposed a maximum limitation of this aid to one half the total expenses of any such board or quarantine authority. The clause would then have read thus:

"To aid State and local boards of health and quarantine authorities, to be expended under the discretion of the National Board of Health, the sum of five hundred thousand dollars is hereby appropriated, *provided* that such reports and information as may be required by the National Board of Health shall be furnished by the State and local boards and quarantine authorities thus aided."

It was represented, however, that the proposed omission of the limiting clause was only recommended for the first year, and that thereafter it would be desirable to limit the amount of National aid to a definite proportion of the expenses of the local boards, and it was contended that this conditional aid would be an effective stimulus to State and municipal organizations, which, under our federative sys-

tem of government, alone have authority to execute and enforce sanitary laws.

But these suggestions of the National Board failed to command the favor and approval of the Senate Committee. It was objected by the distinguished Senator from this State, who was at the head of that Committee, that Congress had no power under the Constitution to appropriate one dollar to purely local sanitary measures. This feature, a favorite and cherished one with the Board, as it had been with your two committees, had therefore to be abandoned, and was actually abandoned with great reluctance and regret. And yet the Board, thus restrained by law, has encountered censure and obloquy, because, in obedience to law, it felt itself constrained to reject applications for money to be expended in local sanitation.

The Senate Committee having thus positively rejected the leading proposition of the Board, the Chairman announced, as the purpose of his committee, the establishment of a national system of quarantine within the scope of Federal power. Within that scope the National Board of Health would, in the event of the passage of the bill then in the hands of the committee, be the supreme power and authority. It would be required to establish an outerline of work beyond the jurisdiction of the States, sitting in judgment upon every vessel sailing on the high seas to American ports, before it reaches the jurisdiction of any State. It would have authority to stop an infected ship at this outer line, and to forbid it going further, and this without trenching on any of the reserved rights of the States. If it saw no sufficient reason to stop any vessel, and should therefore allow it to proceed towards its destination, this would in no degree remove or lessen the right of the State or municipal authorities to exercise absolute power of inspection, detention, and the enforcement of whatever regulations they might see proper to apply. Thus the unqualified right of every State to adopt for its own security whatever quarantine or sanitary laws it might deem judicious and proper, and to enforce them within its own jurisdiction, was expressly and emphatically conceded. A vessel having satisfied the Federal authority would still have to pass the ordeal of State quarantine if the State should choose to establish its separate quarantine. But it was contended that the practical result would be found to be that every State in the Union, except, perhaps, two or three which have established, to their own satisfaction, very elaborate quarantine systems, would soon abandon their quarantine establishments, and leave the whole matter in the hands of the National Board of Health.

When the bill, on being reported from the committee, came up for discussion in the Senate it encountered strong and persistent opposition in quarters where such opposition was least expected, on the grounds alleged, those namely of interference with the reserved rights of the States. After an earnest debate the bill was recommitted by a vote which made it apparent that it could not pass the Senate without radical changes.

It was accordingly modified in many important particulars, especially in striking out two entire sections and parts of others and substituting section 3 of the act, as subsequently approved June 2, under which the Board has conducted all its operations in the fight

against the spread of yellow fever during the summer just past. The substituted section authorized the Board to co-operate with, and, so far as it lawfully may, to aid the State and municipal boards of health in the execution and enforcement of the rules and regulations of such boards to prevent the introduction of contagious or infectious diseases into the United States from foreign countries and from one State to another.

Curiously enough, while the National Board had no little difficulty in ascertaining the extent of its powers under this section, the public generally, including the health authorities of many of the Southern cities and towns, interpreting the law, some by a foregone conclusion as to the supreme authority of the General Government, which they assumed had been delegated to the Board *quo ad* all questions affecting the public health, others by their hopes of obtaining relief from the public treasury, seemed to have taken for granted that the National Board of Health, as representing the national authority, could exercise powers for the relief of State and municipal boards of health, limited only by the amount of funds placed at its control. It was not until after much correspondence and frequent republications of circular No. 7, that parties interested could be brought to appreciate or to acquiesce in the rules which governed the action of the National Board in aiding State and local boards in conformity with the provisions of the law as construed by the chief of the Treasury Department, whose approval was a condition pre-requisite to any and every disbursement of the funds. Thus it had to be explained over and over again that funds were not furnished by the Treasury to State or local boards, but were placed in the hands of a bonded officer, the disbursing clerk of the Board, by whom bills properly certified and approved by the auditing clerk would be paid by check ; that all bills should be in accordance with the estimates previously approved by the Secretary of the Treasury ; should be made in duplicate on forms furnished by the National Board and be certified as to their correctness by some authorized officer of the State Board of Health, or the Governor of the State, and should be approved by some member or special sanitary inspector of the National Board duly authorized to act, and that all bills for services rendered, or for articles furnished, local or State boards must be sworn to by the person rendering the service, or furnishing the article. The enforcement of these rules has brought the Board into disfavor with a number of parties, who strongly object to what they consider an unnecessary adherence to an absurd and very annoying red-tape system.

The Board not being authorized to establish quarantine, or to enforce rules and regulations relating to quarantine, decided to make it a condition of extending aid and co-operation to State and local boards of health, that these should adopt such rules and regulations as might be approved by it. In pursuance of this policy, it prepared a scheme of rules to be recommended to the local and State boards for their adoption. By such adoption these boards would make them their own rules and regulations, and then the National Board would be authorized to aid in their execution and enforcement, the objects being to substitute a rational system of observation and inspection which would but slightly interfere with travel or traffic, and yet pro-

tect the public health, for the shot-gun quarantine, or absolute non-intercourse, the effects of which are often far worse than the evils it is intended to prevent.

In the preparation of the several sets of rules and regulations recommended to be adopted by quarantine authorities at maritime ports, and by State and municipal boards of health, for securing the best sanitary condition of steamboats and other vessels, and that of railroads, as well as those to be enforced in a place free from infection, but having communication, with a place dangerously infected with yellow fever, and where the fever is reported or suspected to exist in any town or place in the United States, the National Board derived valuable assistance from the Sanitary Council of the Mississippi Valley in a conference held at Atlanta during the session of the American Medical Association, early in May. It was also indebted to that council for the suggestion of a practical measure of great importance, the establishment of quarantine stations of observation at several points on the Mississippi River. This suggestion was strongly indorsed by the representatives of the leading steamboat lines on that river at a conference with a committee of the National Board of Health, held by invitation of the board at Memphis, July 2. At this conference assurance was given of the cordial co-operation of the railroad and steamboat interests in all the measures recommended by the Board, with a view to prevent the spread of the yellow fever and other contagious or infectious diseases. All that was asked was that all rules and regulations prescribed by the Board should be made uniform at all places. In accordance with this suggestion the Board established two floating quarantine stations of observation on the Mississippi River in the vicinity of Cairo and Vicksburg, omitting the station which had been suggested for Memphis, in view of the actually infected condition of that city. In the establishment of these special stations, designed not for the protection of any one State, but of the entire Valley of the Mississippi, it was considered advisable, and even necessary, to establish them with the funds placed under the control of the Board, and to operate them through the agency of its own employees. This apparent departure from the general policy of operating exclusively through the agency of State and municipal boards of health in all practical measures of quarantine seemed justifiable, both on the ground of legality and of expediency, in view of the fact that it met with the hearty concurrence of the States within whose territorial limits the stations were proposed to be established, and was recognized by them as an important mode of aiding such States in the execution and enforcement of rules and regulations, which they had made their own by adoption, to prevent the spread of yellow fever from one State to another.

The results realized from the working of this system have been in the highest degree encouraging, as appears from an interesting letter from Dr. J. H. Rauch, dated at Cairo, September 22, and published *in extenso* in the National Board of Health *Bulletin*, No. 14. Referring to the then recent outbreak of yellow fever in Concordia, Miss., he states that the value of the inspection system was strikingly demonstrated, inasmuch as, notwithstanding the demoralization which ensued upon the announcement of this local outbreak, there had been

no interruption to river travel, and, with the exception of a few points below, there had been no resort to the former policy of non-intercourse. He further stated that the interest of the steamboat men continued unabated, and that some of the bitterest opponents at the commencement had become the warmest advocates of this system, and desired that the station should be permanent. It will be noted, however, that he incidentally alludes to a few exceptional "points below," in which the useless and barbarous policy of non-intercourse had not been laid aside. In this connection Dr. F. W. Reilly, Sanitary Inspector of the Cairo station, reported about the same time that complaints were made by captains of boats, that notwithstanding the numerous inspections and multified bills of health with which they were furnished, they were, nevertheless, refused permission to land at several points on the river. This, he reported, was beginning to produce a feeling of impatience and a disposition to evade inspection when possible.

These facts are cited somewhat in detail, for the reason that in the discussion which is to ensue, the question as to the expediency of maintaining permanent stations of observation on the Mississippi River is one of the prominent topics, and you will be invited to express your opinion as to the expediency of incorporating this feature in a plan for a national quarantine, and as to the relations which such a system should bear to State and local quarantines. The conditions under which the representatives of the steamboat lines agreed to be governed by the rules and regulations recommended by the National Board, namely, were that they should be enforced with unanimity, the facts stated by Dr. Reilly as to the disappointment of their expectations in this regard, with the resulting inconvenience and annoyance experienced by them, and the obstructive course pursued by some of the local authorities, indicate the principal difficulties to be met, and, if possible, overcome, in order to a perfectly satisfactory working of any system of inland quarantine which is attempted to be enforced with uniformity under the auspices of a central board of health.

A similar difficulty would be presented if the Board should attempt to establish maritime quarantine stations of inspection, as at Delaware Breakwater, in Hampton Roads, and at certain points on the Gulf coast, with the view of protecting several States and municipalities against the introduction of contagious and infectious diseases by means of vessels sailing from either foreign or American ports. If the health authorities of the States and municipalities, for whose protection they would be established, should ignore them and subject vessels already furnished with clean bills at their stations to further detention and expense, the measure will cause such dissatisfaction and complaint as to render it a question of doubt whether they should be established. And yet the subject is one of very great importance. It has been affirmed by high authority that the lack of power on the part of the General Government to control the maritime quarantine of the American ports precludes the possibility of our country becoming a party in any international congress which might be convened to consider this subject and to recommend international treaties with reference to mutual protection against the interchange of infectious diseases.

This subject then, involves questions of a delicate and difficult nature, which will require the most careful consideration of both statesmen and sanitarians. I confess that I can see no other way of removing the difficulties than that of obtaining the consent of the States directly concerned to a uniform plan of national quarantine, which, in the case of inland quarantine, will require the consenting States to exercise their undoubted authority to prescribe the rules which should govern the action of municipalities within those States as to all quarantine measures. In respect of all measures of local sanitation, I would leave the municipal government to the freest exercise of the self-governing principle.

The only independent authority in respect of enforcing quarantine regulations conferred upon the National Board has reference to such as should be observed by vessels at foreign ports where contagious or infectious diseases exist, when such vessels are about to sail for any port of the United States.

The Board is required by the act prescribing its duties to prepare rules and regulations, which, when approved by the President of the United States, shall be enforced by the consular officers of the United States at foreign ports, submission to them being made the condition of these vessels having free access to our ports, and a failure to observe them being resisted by a heavy pecuniary penalty.

This system of inspection of vessels at foreign ports of departure about to sail for ports of this country, was a step in advance of the quarantine system of any other nation, and manifestly a most important one. But to carry out this system in a degree which will insure the greatest efficiency and success, there should be an international code, and this question has recently been discussed at a conference of the Association for the reform and codification of the laws of nations, held in England, when Sir Sherston Baker read a paper on the international rules of quarantine, and suggested that an international bill of health might be granted by the local authorities of the port of departure of every vessel, to be delivered by the Consul representing the port of destination, in such terms as he might think fit, and a similar visé should be required at every port touched at, both from the local authority and from the Consul representing the port of destination. A foul bill of health or a case of disease past or present, on board, or the fact of any port having become infected within a limited time after the departure of the vessel from it, should entitle the local authority of the port of arrival to place the arriving or touching vessel in quarantine, according to a certain scale containing a maximum and minimum period of quarantine.

As to the lessons taught by this summer's experience, I may cite a few propositions as having been established on evidence more or less satisfactory:

1. That in yellow fever, as in most other infectious diseases, unrestricted family intercourse is one of the most fruitful means of spreading the seeds of the infection, and by this means the disease may be carried from a focus of infection to a previously uninfected locality, where a new focus may be developed.

2. That when prompt notice is given of a case thus imported into a previously uninfected place, proper measures energetically employed will generally suffice to arrest the spread of the disease.

3. That even when the outbreak has assumed the proportions of an epidemic, it is possible by measures rather difficult of execution and requiring not only the strong arm of the law and the use of the public funds, but also the willing consent of the population, to stamp out an existing epidemic by removing all the unacclimated portion of the population and preventing the introduction of any such material from without. Such a measure, practically impossible for large cities or towns except in a very partial degree, may be entirely feasible for villages and towns of moderate population.

4. That a rational system of inspection and disinfection which is not seriously obstructive to commerce and travel, may be as effectual a security against the introduction of yellow fever to our ports of entry and to inland towns as the costly and cruel plan of absolute non-intercourse. In a word, the experience of the National Board of Health during the summer is in accord with that of the quarantine authorities of New York, and justifies the use of the term quarantine to signify "the administration employed to determine the presence or absence of the causes of contagious and infectious diseases in vessels arriving at a port, and the securing, if present, their removal or destruction, and does not imply detention for any specified time, nor for more time than is necessary for the above purpose."

It is not my purpose to anticipate the discussion which will doubtless take place at a later stage of our proceedings, as to the duties and powers which should be assigned to a permanent central board of health, but I may be permitted to express the hope that those who expect to express their opinions will duly consider the special difficulties attaching to the subject by reason of our federative system of government. It is not so much what is desirable as what is practicable—not so much what ought to be done in another and impossible condition of things as what can be done under the actual relations of the States to the General Government, that you are asked to consider. It is generally conceded that the power to make and administer health laws within the States of this Union has not been granted in the Constitution to the General Government. But the question in respect to quarantine as a means of preventing the spread of infectious diseases from one State to another is much too complex and important to be summarily set aside on such a plea. In the opinion of Senator Harris, of this State, who is known to be a determined advocate for a strict construction of the Constitution, the power to regulate commerce not only authorizes Congress to establish maritime quarantine by going outside of the jurisdiction of a State, in order to prevent the introduction of infectious diseases from foreign ports, but also to prevent their transmission from one State into another, though wholly powerless to interfere so long as there is no danger to some neighboring State or States. If, however, a neighboring State is threatened, the power to regulate commerce between the States gives, in his opinion, not only the right to say that the infectious material shall not pass the border into another State, but also the right to enforce the declaration by going, if necessary, to the very centre of the State in order to "throttle the noxious principle at that point." But it must go for the exclusive object of so regulating commerce as to prevent the transportation of disease from one State to another, and

whatever is necessary to be done in order to accomplish that object may be legally done under the Constitution. But you must not, under the pretense of accomplishing that object, enter upon general work of sanitation not contemplated by the Constitution of the United States, and which the General Government has no power to do under that Constitution.

In conformity with this interpretation of the Constitution as to the limitations of Federal authority, the National Board of Health has disallowed all applications for aid to carry out measures of local sanitation, except in cases of actually existing outbreaks of yellow fever, when measures of local sanitation made it an important or even necessary part of the machinery for destroying the noxious principle, at points, whence otherwise it might have been transmitted to other States.

Assuming this to be a correct construction of the organic law, the question recurs as to the expediency of exercising the power and conferring upon a Central Board of Health, by appropriate legislation, the authority to make and enforce legitimate quarantine regulations. It is to be considered whether, granting the existence of the power, it will be wise to exercise it in opposition to the wishes and opinions of the local authorities.

To a certain extent the sanitary administration in England supplies us with valuable instruction as to the means of obtaining useful results from the co-operation of central and local sanitary boards. In regard to almost all subjects of legislation, the Anglo-Saxon mind is prone to manifest an instinctive, or else an inherited, jealousy of the central power. It is the testimony of that eminent sanitarian, Dr. W. B. Richardson, that "if the mind of the nation could be fairly tested as to its desires, three out of four would," in his opinion, "prefer the self-governing to the central method in any measure that might be proposed, even though the measure had reference to the dearest of all interests, the first of all interests, the health of the nation in its individual and collective capacity. And whenever," he goes on to say, "we have in a small way gained an experience from a political experiment, in which central authority has been the source of power, the result has, perhaps, without an exception been, at least, but partly successful." Referring then to the zeal and enthusiasm of many who are in the first rank of sanitary advance, and who, like many with us, in their zeal to accomplish all that they are assured preventive medicine can effect, would not waste time in educating the people, but would enforce their measures with the strong arm of the central government, he raises his voice with no uncertain sound against this conception as applicable to his own country. Adverting to his long and varied experience in the trained service of sanitary science, he derives from that experience this definite conclusion, that nothing has so much forwarded the great progress that has been witnessed during the past quarter of a century as the perfect freedom of action that has been permitted, and that nothing more disastrous at this stage of our course, or possibly at any stage, could occur than the interposition of central authority that should attempt to enforce even the wisest of rules on the community by serving it with a subpœna to attend even to its health. "What is demanded now when the weight

of superstition is removed and every man feels that disease is a burden he carries on his own shoulders, is *education*, with time to give it room to turn in and freedom to give it readiness and facility of action."

A similar view was taken by a yet higher authority, Dr. John Simon, the late medical officer of the Privy Council, who held that in the large and permanent interests of sanitary government, a maximum of local self-reliance and a minimum of central intervention are in themselves important aids. He was accordingly of opinion that in general the intervention of central authority should, in the main, be limited to advice and pecuniary aid. But, in order to be placed in a position of advantage for knowing what advice should be given, he attached the greatest importance to systematic inspections by special agents of the central board. In this way, better than by mere inquiry and advice by letter, the board may "competently understand the local conditions or proceedings which it desires to judge, and, secondly, in a degree and with an effort which no letter-writing can attain, it may make to the local authorities such representations and may give them precisely such advice as the particular local circumstances require." Such inspections he considered to be specially called for whenever the Registrar General's returns indicated any unusual prevalence of preventable diseases which had not been prevented, in order that by such skilled inspection under the public health act, the board might satisfy itself as to the circumstances and causes of the failure of local sanitation, giving thereupon such skilled advice, or proceeding in certain extreme cases to issue (under the diseases prevention act) such orders and directions as the particular occasion may require.

"Thus by skilled inspections on such a scale as practically to represent a central audit of local death accounts, and an exertion of central influence or authority in favor of more active or better directed local efforts in places where human life has not been sufficiently cared for, the local board would be in reality, though only in the limited sense which the law prescribes, a board of sanitary superintendence for England."

In any attempt to employ this machinery as a part of a permanent system of sanitary superintendence for the United States, we shall be placed at a great disadvantage by the lack of as reliable weekly returns of mortality as was afforded to the Local Government Board from the office of the Registrar General in England. But even now most of the municipalities furnish returns weekly to the National Board of Health, and it will be a most important part of the duty of the future Board to devise means for perfecting these returns, and, if possible, to extend the system to the scanty populations of the rural districts.

It has already been stated that the notion of aiding State and local boards of health by contributing, when necessary, the funds for paying one-half of their total expenses, as proposed in the original draft of the constituting act, was derived from the English practice, according to which half the salaries of the employees of the local authorities are paid by the Local Government Board or central authority, out of funds voted by Parliament. Such a system and its results are

full of instruction and encouragement for us. Another extremely important feature of the English practice is particularly worthy of imitation, as having yielded the most beneficent results, and as being clearly within the limits of the constitutional powers of the General Government. I refer to the special scientific investigations conducted by experts appointed for the purpose by the Local Government Board, and published in connection with that remarkable series of reports by Mr. Simon, which, extending from 1869 to 1875, has, as so justly remarked by his successor, Mr. Seaton, had so large an effect in shaping professional and public opinion in sanitary matters, not only in England but in all civilized countries where such matters receive any attention. Such was the importance assigned to these investigations by this eminent physician that, on resigning the office in which he had rendered such valuable services in the cause of preventive medicine, he made an earnest appeal to the Local Government Board to continue them under the administration of his successor, with the statement that he entertained the "strongest conviction that in regard of all antagonism to disease, whether with preventive or curative measures, and whether by official or private hands, medicine's best prospects of increased success are inseparable from such studies of exact science, and that, in proportion as the pathological insight becomes more clear, the growth of practical power will certainly follow."

It is needless to insist upon the truth of his remark, that "where research, if it is to succeed, requires systematic and continuous labor, extending over long periods of time—labor not only inconducive to immediate pecuniary profits, but, perhaps, involving much cost," it can hardly be expected that the study, however great its eventual importance, will be adequately cultivated by private investigators. To foster and encourage such investigations by competent experts appointed by the Board, to organize a system of registration of births and deaths for the whole country, with weekly returns to the central office, and eventually a registration of diseases not only of man but of animals, and by skilled inspections, with an exertion of central influence, by advice and pecuniary aid as far as may be lawfully done, in favor of more active or better directed local efforts in places where human life had not been sufficiently cared for, here is scope enough for the work of a central board of sanitary superintendence, under the auspices of the General Government.

It is true that the efficiency of such a board would, under the limitations of authority imposed by the National Constitution, rest upon a less secure basis than that of the Local Government Board of England, where central influence is backed by a reserve of central power, which can be brought into exercise when the exigencies of the occasion require it. Thus the health act of 1875 gives to the central board "power to make, alter or revoke such regulations as to the board may seem fit, with a view to the treatment of persons affected with cholera or any other epidemic or endemic or infectious disease, and preventing the spread of cholera and such other diseases," and imposes a penalty not exceeding fifty pounds on any person willfully neglecting or refusing to obey or carry out, or obstructing the execution of any regulation made under this section.

Another section of the same act gives the Local Government Board compulsory power to unite two or more districts when it is satisfied that it would be to the advantage of the districts to combine, and in such cases it may prescribe the mode of appointment of the Medical Officer and Inspector of Nuisances, and the proportions in which the expenses of such appointment, and the salary and charges of such officer, shall be borne by the local authorities who make the appointments.

Thus it appears that the independence of the local authorities is in a considerable degree a qualified independence, even as regards the administration and execution of laws enacted for their government. Moreover, the laws which prescribe the duties of both the central and the local boards emanate from the same legislative source, and are necessarily concordant. With us the practical difficulty arises from the fact that the central Legislature, which establishes the National Board, has absolutely no authority to make health laws for the States, its sole power in this connection being limited to measures necessary to prevent the spread of infectious diseases from one State into another, such power, too, not being expressly granted, but constructively derived from the commerce-regulating clause of the Constitution. This must be kept steadily in view in our efforts to devise a plan for the organization of a National Board of Health, if by such a plan we understand not merely the number of persons who shall constitute the Board and their mode of appointment, but also a definition of the duties to be assigned to it.

I make no apology, gentlemen of the Public Health Association, for having selected as the subject of my discourse a brief history of the steps which led to the formation of the existing National Board of Health, and an account of its operations. I have done this deliberately, in full recognition of my official relations to the Association, and with no further reference to my correspondent relations to the Board than as enabling me to speak with the authority of a personal knowledge of the facts cited. I hold the National Board of Health as organized under the constituting act, to be the offspring of this Association. It was the product of legislation suggested by your committees specially instructed to use their best exertions to secure such legislation, it being one of the leading objects of the Association, as expressed in the second section of its Constitution, to promote organizations and measures for the practical application of public hygiene. It was, therefore, regular and proper that an account of the action taken by the Executive Committee to secure the desired legislation and of its subsequent results should be reported to the Association, and it seemed to me legitimate and appropriate to discharge this duty in connection with the usual Presidential address.

At the proper time you will be called upon to announce your verdict of approval or disapproval of the proposed amendments to the Constitution submitted last year by my respected predecessor. At that time the views of the Executive Committee will be indicated in the form of a resolution to be presented to the Association.

In this connection I desire the Association to consider the expediency of making an attempt to raise by subscription a fund for the permanent endowment of the secretaryship. The duties of that office

are by far too onerous to be imposed upon any member of this body without at least a moderate compensation. I believe that such an endowment could be secured by earnest and persistent efforts, and until it can be accomplished, I recommend that the traveling and other necessary expenses of the Secretary while attending the regular meetings of the Association, including the present meeting, be paid out of its treasury.

I cannot close this discourse without again congratulating the Association upon the realization, at a much earlier day than was expected, of its hopes for an official recognition by Congress of the duty of government to provide for the security of the public health by appropriate and adequate legislation. This somewhat unexpected success is due in great part to fortuitous circumstances, without which the best directed efforts of this body might not have availed for many years to come. Still, it may be confidently affirmed that your counsels have moulded and shaped the legislation which has taken place, and will not be without weight as to future legislation.

I would fain hope that those who have recently connected themselves with this body under the stimulus of a newly awakened interest, arising from their desire to stop the ravages of the terrible scourge which has scattered desolation and death over so large a portion of this fair land, will not be satisfied with the extermination of this foe, if, indeed, so desirable a consummation can ever be brought about, but will remember that many another pestilence, walking in darkness with a destruction that wasteth at noonday, will remain to be fought and to be subdued. In this warfare the Public Health Association has a mission not less important, nor less promising as to the attainment of useful results, than that of the National Board of Health, which it has been instrumental in creating.

Especially is this true with reference to suitable sanitary legislation by the several States, without which the efforts of a central Board must necessarily be more or less inadequate to the accomplishment of the ends to which those efforts are directed. I trust, therefore, that there will be no relaxation of effort to make our association avail as much in the future as in the past, or even far more so, to increase the common stock of knowledge by sanitary studies and investigations, to educate the people in the principles and facts of private and public hygiene, and to promote organizations and measures for their practical application, until all shall have been done which in the scheme of Providence it may be possible to do, to make "life worth living," as well in respect of that most desirable of all its accidental blessings, health of body and health of mind, as it essentially is worth living in respect of that deep, inherent moral worth of which no man can be deprived except by his own acts of sinful rebellion against his Maker.

PROTECTION FROM VENEREAL DISEASES.

Dr. A. L. Gihon, Medical Director of the United States Navy, read the following paper on "The protection of the innocent and helpless members of the community from venereal diseases and their consequences."

The American Public Health Association has assumed to be the instructor and guide of the community in sanitary matters. Its self-

imposed mission is to teach men how they should live to enjoy the greatest possible health, that not only the highest happiness which this earth affords, may be the lot of every living being, but that the progressive development of the human race may be advanced by the strength and beauty of its individual members. It speaks as well to the lowly poor as to the exalted and rich, that there can be no bodily vigor without a liberal supply of wholesome food and water—that the polluted air weakens the brawny arm of the Hercules and clouds the brain of the Milton—that a dirty skin and soiled attire are not only inconsistent with physical well-being, but with the mental graces which make the gentle man and gentle woman.

To instill these truths in every man and woman and child is the acknowledged duty of the sanitarian, and since to live long and well and happily is the aim of every human being, however rich or however poor, no one should rebuke his zeal when he preaches a crusade against the vices by which men deliberately disfigure that body, which must itself be sound to be the home of a sound mind. Day by day these preachers of the gospel of health are multiplying, and their voices are heard in every quarter urging men to come forth from the squalid hovels and squalid palaces they have ignorantly builded, and in which they drag out feeble existences, into the pure air and sunshine, which can alone make them God-like men. But, while the sanitarian is allowed to teach us what we should eat and drink—how we should clothe ourselves—how our dwellings should be built, our land tilled, and our children reared—there are other acts which help make up the economy of life to which he is expected to be not only blind but dumb, and until recently the field thus barred against him, he has himself not sought to enter. The delicate questions which concern phenomena, of which the end is the very reproduction of the species, and upon the healthy performance of which depends its future weal or woe, are shrouded with the impenetrable mystery of ignorance. The young man and the young woman emerge from their chrysalis adolescence into the butterfly world, to be attracted and dazzled by the first bright light—only accidentally fortunate if their beauty and life are not forever withered by the fierce fire that had seemed to them so fair. When the simplest teachings of the sanitarian are unheeded by even the most intelligent and enlightened members of society—when whole races eat food so cooked that dyspepsia becomes their national characteristic—when our own wives and daughters deliberately torture their shapes and invite disease into their misplaced organs—when we, who have come here, have had to sit and sleep in cars, funky and foul from neglect to use even the wretched means of ventilation provided, and are at this very moment breathing an atmosphere that is unwholesome—what reason have we to expect that these greatest of life's mysteries, whose normal working is vital to the race itself, shall not work that race's ruin? Grant that the individual may play what havoc he chooses with himself and his happiness, society has the right to demand that self-indulgence shall work no evil to a single other being than the transgressor, and, hereafter, it will look to the public health officer to close up the avenues to disease, which lead from this as from every other centre of violated rightful living. The fetid sewer, which pours its

typhoid emanations into a neighborhood, is quickly cleansed; the sufferer with smallpox or scarlet fever is carefully isolated from communication with his fellows; the frightened victim fleeing from the yellow fever district is ruthlessly driven back from the refuge he would seek and his dead body and everything he has touched buried out of sight, but the infected prostitute lives to ply her calling undisturbed, often under the very shadow of the house of God, and the foolish youth, whom no hand has stayed from going after her, "straightway, as an ox goeth to the slaughter," enters her house and comes forth a leper, to be the father of lepers. What have the wisdom and the experience of the civilization of this century done in this country to counteract the ignorance and the inexperience of this abandoned woman and this heedless boy, and prevent them sowing the seeds of a pestilence whose victims outnumber those of any other known malady. A few hundred human beings have died of yellow fever this summer. How many thousands, blighted by venereal diseases, have, during that same time, crawled from the wayside into obscurity to linger silently for years, but just as certainly to die before their time—to die, not like the fever's victims, whose loathsome bodies, wrapped in their own loathsome cerements, are hidden in the grave, but to die not till they have transmitted their fatal heritage to long lines of sufferers.

I am not here to argue the necessity for prostitution, though I might quote, in this connection, the words of St. Augustine, whose experience in the world before he abjured it enabled him to look on the things of earth with eyes not blinded by the glare of a longed-for heaven. Society itself, which makes marriage impossible for the young, whose natural impulses lead them to mate, is responsible for its existence. The maddening misery of hunger and want, the blinding sting of unrequited toil, the despair of unredressed wrong, on the one hand, and, on the other, the wretched shams of social life, vanity, folly, extravagance, the passion for display, the love of dress, even in this age of civilization, fill brothels to overflowing, and fallen Eves tempt willing Adams as when the world was young.

The sanitarian may heartily amen the prayer of the earnest follower of the Church, who would deter men and women from this as from all other wrong-doing, but while the evil exists, it is his duty to so hedge it in that it may not prove a quicksand to unwary travelers; and we, of this Public Health Association, can no longer evade the serious responsibility which devolves upon us. If it is our mission to wage war upon the dragon disease which assails the human race, we must spare none of its brood. We must not slay cholera and yellow fever, and typhus, and small-pox, and the plague, and let syphilis live. The drunkard, who murders his wife and child and neighbor, is bound hand and foot. Why shall we allow the harlot to poison our sons to death, or the libertine to torture his own wife and child with the life-long agony of incurable disease?

Your guileless daughter bestows her heart upon the youth of her choice and seals her troth with a maidenly kiss, pressing her pure lips to lips which she had more safely pressed were they jaundiced with yellow fever—your helpless infant is fondled by a polluted nurse—your wife poisoned in her household duties by a diseased

housemaid—your son, whom you have studiously avoided instructing in the physiology of his own manhood, is led unresistingly, because ignorantly, to make that one false step, from the consequences of which no after repentance will ever deliver him.

You yourself use your friend's pipe, or drink from a public cup, or take the proffered oyster with your glass of beer, from a fork that has already done duty with a questionable predecessor—you are shaved and your hair brushed in a public barber shop, where the syphilitic has preceded you—you sleep in hotels, palace cars and steamboats under sheets and blankets which are not always changed with each new occupant—you unsuspectingly encounter the steward who prepares your meals, the cook who has cooked them, and the attendants who have served you on board the passenger steamship, though they may all be diseased—and if you live in one of our large cities, the whiteness of the products of the Chinese laundry tempts you to send your linen to be sprinkled with the saliva which an infected coolie dextrously emits in a fine spray from between his teeth.

I am not sketching terrible demons of fancy. Every intelligent medical man who listens to me knows that I am putting frightful facts in simple words, which have no double meaning.

In the time of Brivé, fifteen women contracted syphilis from being attended by a midwife who was suffering from chancre on the finger, and the women in turn affected their husbands and their children: and Blyth goes on to say: "The jurist must allow, however rare or improbable in practice, that any of the venereal infections may be produced by such accidents as using a public latrine, the seat of which is soiled by infectious matter, by drinking from an infected cup.

My friend, Dr. Bailhache, of the Marine Hospital Service, only a day or two ago, told me of three stewards from European passenger steamships who were in the Bedloe's Island Hospital with mucous patches in their mouths.

In my own experience, I have known a sailor confined in hospital by an amputated leg to contract a venereal sore on his visit to a closet the first morning he had been allowed to hobble on his crutches, and I have been consulted by an estimable matron of a hospital for a troublesome skin disease she feared she had contracted from handling the linen which had been used by some of the nasty patients, who finally confessed her own fault, and was dismayed to learn that she and not the patients had made the linen nasty.

Finally, I have seen one of the brightest ornaments of our profession, a former naval surgeon, go to an early grave with syphilitic disease of the spinal cord—the result of the digital examination of a patient who had an unsuspected vaginal chancre.

Since I first broached this subject at our annual meeting at Boston, three years ago, I have waited for some action on the part of the Association in this matter. Recent appeals to me by men of prominence from various sections of the country have determined me, without further delay, to take the initiative in urging you to instruct the public in this important field of sanitary science.

That community which tacitly fosters prostitution by indifference and inaction, dares not resent your interference nor be deaf to your

warnings. So long as even little girls play the strumpet in the public streets of Boston and New York and Philadelphia (perhaps, too, in Nashville), pseudo-Christians shall not cry shame, nor silence. The very evening of the day when I was gently urged in Boston not to press the matter of the sanitary supervision of public women, I saw four little children, the eldest scarcely in her teens, openly soliciting men in Washington street, while the day after, five young girls, with little attempt at caution, sought room-mates among the passengers on a single steamer on the Sound. Every now and then the family paper furnishes detailed accounts of raids upon disreputable houses, and gangs of poor creatures are dragged through the broad daylight of the streets into the police courts in the name of morality, but how many spurious dentists' offices, and dressmakers' rooms, and cigar shops, stocked with empty boxes, are undisturbed year after year in the busiest streets of the large cities! How many so-called boarding houses, and medical electricians, and electric baths occupy the most fashionable quarters, where the reputable tradesman is not permitted to have his shop!

So long as prostitution exists, it must be in some way controlled, regulated or restrained from its full measure of evil. Christ did not spurn the adulteress, but there are false assumers of Christ's name who would look upon these unfortunates as dead to reformation, and who claim that venereal disease is the punishment designed by a merciful creator for the sin of immorality, and, therefore, ought not to be eradicated. I have known of one such false physician, who refused to treat a poor sailor, who begged relief from the horrors he felt approaching, because this was God's finger laid on him for his debauchery. As well smite your breasts and idly cry, *God's will be done,* and believe that in His merciful Providence He has sent diphtheria to rob you of one after another of your little children, while you leave untouched the fetid sewer beneath your dwelling.

There is no need to read a long array of figures exhibiting the proportion which venereal diseases bear to other affections of the human system in medical records. From the very nature of these diseases, and the concealment practiced respecting them, these figures, however alarming, understate the truth. Dr. Sturgis estimates that in New York at least 50,000 cases are going about, many of them, it is the appalling fact, in a condition favorable for conveying the disease. Even the sick returns of the army and navy are inexact, general terms, such as rheumatism, concealing a great proportion of chronic syphilitic and gonorrhœal complaints. But even the number of acute cases, appearing under proper nosological heads, shows how seriously the efficiency of these branches of the service are impaired by these diseases alone. The facts, too, that there are schools of medicine, with special chairs for professors of diseases of the genito-urinary apparatus, that there are distinguished practitioners whose professional work is almost entirely restricted to this class of cases, that there are portly octavos devoted solely to them, speak sufficiently of their prevalence.

But these are not lessons and cases and books that are published broadcast. The student and his teacher, the patient and his physician, are reticent of their knowledge, and the general public, therefore, is profoundly ignorant of the presence in its midst of these fatal

maladies. Every adult of any experience is, of course, aware that houses of prostitution outnumber churches and schools in every city in the country, but very few suspect how immensely greater is the number of smaller establishments, where a couple of women live together, or where one alone plies her trade. None imagine—for they could not do so and remain any longer indifferent—how rapidly, ceaselessly, surely, these myriad mills of evil are working the impairment of the physical strength of this country.

Rheumatism is written over graves prematurely filled by strong men crippled in their prime. *Scrofula* hides the secret sin of the parent, stamped in the slender form and wasted frame of the invalid child. *Cancer* is the foul lie which is buried with the wife, who has silently suffered a life of the most excrutiating agony which human flesh can endure. Who is there among us that can impiously attribute to a good God the deliberate purpose to make these little children, these gentle mothers, victims of such horrible tortures, in expiation for sins they never committed?

If Christian hearts cannot sympathize with the unhappy outcast, who has wedded sin, nor seek to save her from any of the hideous dangers which attend her calling, lest they seem to countenance her vocation and make it less repulsive; if they have no pity for the heedless youth, who, for one moment, it may be, listens to folly and follows sin, but must leave him to march blindfold to his doom, lest they seem to deprive debauchery of one of its terrors; if the trumpery deity they have fashioned in their own image and endowed with their own petty and vindictive hates, must have these sinners sacrificed upon his altars—in the name of Him who said, "He that is without sin let him cast the first stone," I appeal to those honest and earnest lovers of their kind, who dare to bear His name and seek to walk in His footsteps, no longer refuse to protect the innocent, and the helpless, at least, if none others, from that beside which death were a blessing. In their names—in the names of those horrible wrecks of humanity, whose pictures I exhibited at our last meeting—innocent children—yet only horrid shapes of children—condemned before their birth to lives of hideous deformity and ceaseless agony—I appeal to this Association to undertake the task of banishing venereal disease from this land.

Other nations have successfully begun the attempt. Spain and Portugal lie side by side. I have passed three successive winters at Lisbon without a case of venereal disease coming under my observation, among three hundred men and officers accustomed to frequent the city, and in the following spring have sailed for Cadiz, a seaport of the same character, and but two hundred miles distant, where, under similar circumstances, almost every sailor, and not a few who were not sailors, who visited the shore, returned diseased. In the one there was a strict sanitary surveillance of the public women; in the other the Government ignored their existence.

In Italy, prostitution is under the rigid control of the sanitary service, of which the personnel consists of a chief inspector, inspectors, delegates, sanitary officers, medical examiners and police watchmen. The Chief Inspector is the head of a bureau of the Ministry of the Interior. One inspector resides in each of the principal cities, a dele-

gate in the smaller, and a sanitary officer in every district where such is considered necessary. The woman detected in prostitution, is publicly known to be guilty of it, is privately summoned before the sanitary officer, who endeavors to dissuade her from her life, ascertains who are her relatives, communicates with them, and makes every effort to reclaim her. If she persists, she is registered, watched and regularly examined, that she may not contract, or, having contracted, that she may not communicate disease, and in Sicily I was told that nuns of certain religious orders were sanitary examiners, for the opportunities it gave them of seeking the reformation of their fallen sisters.

In France the sanitary surveillance exercised over public women is still more thorough and exacting, and it is exercised in such a way that it is rather a system for the repression of prostitution than for its toleration and encouragement. Experienced and capable sanitary agents examine the candidate for registration on the list of public women. Her antecedents are adroitly ascertained by gentle treatment and kind inquiry. The abominable character of the career she seeks to enter is depicted. She is counseled, advised, urged to return to her home, and if that has been closed to her by unforgiving relatives, she is commended to the various associations of benevolent women, who are ready to aid the erring daughter to return to the paths of virtue. If she is perverse, determined upon her course, and old enough to decide for herself, the fatal entry of her name is made on the police registry, and she is from that hour watched every day of her life, imprisoned within confines as impassible as stone walls, shackled with stronger bonds than manacles of iron. The sweet garb of womanhood is stripped from her, and all unsexed she enters the abode of sin—in form a woman, without her gentle spirit and pure soul.

Briefly, without considering the organization of the French Sanitary Service and its method of administration, the repressive measures instituted by law respecting the class of unfortunates who are thenceforth known as public women, are as follows:

They are required to report at least once every fortnight to the health officer for examination.

They are forbidden to entice to debauchery at any time during the day.

They cannot appear in the public thoroughfares until half an hour after the street lamps have been lighted, and at no season of the year before seven 7 P.M., nor remain there later than 11 P.M.

They must wear a simple and respectable costume, which shall not attract attention either by its costliness or the brilliant colors of material, or its exaggerated style.

They cannot go bareheaded.

They are forbidden ever to speak to men accompanied by women or children, or to address a provocation to any one in a loud voice or persistent manner.

They cannot, at any hour, or under any pretext whatever, show themselves at their windows, which must be kept constantly closed and furnished with curtains.

They are forbidden to stand on the public streets, to collect in

groups, to walk in company with each other, to promenade backward and forward within too limited a space, or to cause themselves to be followed or accompanied by men.

The vicinity of churches and chapels for at least twenty metres—all covered passages—the gardens and borders of the Palais Royal, the Tuileries, Luxembourg and Jardin des Plantes are prohibited to them.

The Champs Elysées, the esplanade of the Invalides, the outer Boulevards, the quais, bridges and in general all deserted and obscure streets and localities are also interdicted.

They are expressly prohibited from frequenting public entertainments, or private houses where prostitution is clandestinely managed. They cannot go to *tables d'hôte*. They cannot live in buildings where there are boarding or day schools, nor occupy apartments outside of the locality in which they dwell.

They are forbidden to share their rooms with a mistress or another public woman, or to occupy a furnished apartment without authority.

They are cautioned in their own houses not to do anything which shall give rise to complaints by neighbors or passers by.

Is this a life in which any woman can enter without a shudder? Could the narrow wicket leading into this dread abode be more difficult to pass, were it studded with massive bars and bolts, or swung on shrieking, creaking hinges? Who that enters does not at once look longingly to that broad open door on the other side of this vile prison, through which the sunlight streams, and outside which stand good angels, with downcast eyes and arms outstretched, ready to clasp their repentant sister?

In Hamburg, the control of the police over prostitution relates not only to the acknowledged prostitutes, but to those who harbor them, and extends to illicit intercourse generally.

Prostitutes are strictly prohibited—

1. To allow any young man, under twenty years of age, to visit their rooms, or to have sexual intercourse with them;

2. To undress out of their sleeping apartments, especially in public rooms;

3. To expose themselves unnaturally;

4. To allow dancing, music and playing, etc., except as permitted by the police authorities, and then only until midnight; or,

5. To commit any act whatever of public misdemeanor.

They are not permitted to appear publicly in low-cut dresses, nor to leave their dwellings in the afternoon between two and five o'clock, from March till September, nor to be out after 11 P. M. without a male companion, nor to drive in open carriages, nor visit public saloons and places of amusement, nor sit in the parquets and lower tiers of boxes of theatres, nor to knock on their windows, nor address men in the streets, nor write letters to men, nor make appointments with men at hotels or public places.

What do we—the foremost race in Christendom—do to repress prostitution? Nothing—virtuous nothing? No—criminal nothing. The higher we rank in self-complacent godliness the less we do. We see the streets, especially the fashionable thoroughfares, thronged

with harlots, conspicuous by their natural beauty or their skillfully added charms, by the extravagant richness and fashion of their attire, by their magnificent equipages, and their immodest demeanor. We meet them in the theatres, the concert saloons, the ball-room, and at the hotel table. We elbow them in the great shops and streets, and we pull our wives and daughters aside in the hope that their feminine curiosity will not induce them to inquire who are these gay birds of such brilliant plumage. If they do not learn from each other—if the mother neglects to instruct her daughter, the morning papers will give the street and number of Madame So-and-so's splendid establishment, which was raided by the police the night before, and its elegantly attired inmates brought before a magistrate, fined, admonished, and discharged, to return to their former abode, or, if that has been broken up, to be scattered to a dozen new sites.

Is it not better that the red light and conspicuous number should mark the door of the strange woman, "in the twilight, in the evening, in the black and dark night," that the closed blinds and sombre stillness should silently say: "My son, remove thy way far from her, come not nigh unto the door of her house, lest thou give thine honor unto others and thy years unto the cruel," than that the brazen affectation of respectable callings in reputable neighborhoods should make it possible for men and women to frequent them without concealment and without fear of detection?

Is it not better that the poor creature, driven by want, or wrong, or folly, or ignorance, by love of dress or innate wickedness, to seek the harlot's calling, should be met by the law's representative, the official guardian of the public health and public morals, advised, admonished, aided, opposed, or when all else fails, sternly and forever watched and restrained, than that sham Intelligence Offices should allure young girls to ruin, and an army of merry wantons openly recruit their ranks from among the hungry, ill-clad daughters of honest toil?

This is the age of responsibilities. With greater enlightenment and advanced civilization come higher obligations of man to his fellow man. The mother and father are culpable who allow their sons and daughters to be ignorant of the pitfalls which beset their way in life. Society is criminal which allows these pitfalls to exist without the signal light and sign-board which should mark their site. The American Public Health Association will be equally guilty if it neglects any longer to instruct society in its duties, in this as in every matter which concerns the public weal. Let it speak the truth plainly and fearlessly, but gently and decently—so as not to shock the sensibilities of truly Christian people—aiming to accomplish only good—without giving encouragement to vice by making its ways less thorny or repulsive.

There is, however, no need to wound any one's sensibilities by an elaborate system such as the French, Italian, Portuguese or German, based upon the official recognition and organization of prostitution. "In Denmark and Norway," says Surgeon Thomas C. Walton, U.S.N., to whose able reports I am indebted for many other valuable facts, "while prostitution is looked upon as an ineradicable evil, yet by the mere application of the ordinary laws relating to disorderly charac-

ters and those for the suppression of contagious diseases, through the energetic action of the sanitary board, this vice and its consequences are probably held under better control than in any other part of Europe."

It is undeniable that prostitution exists undisguised in our midst as it existed when Tamar sat among the harlots on the way to Timnath and enticed Judah—and when Moses issued his sanitary edicts regulating the commerce of the sexes—but with prostitution itself we need have nothing avowedly to do. Our purpose is to protect the pure and guileless against the dangers of venereal disease, as against small-pox and yellow fever. To do this it is only necessary to establish a well organized sanitary service, with its agents or inspectors in every hamlet, village, town and city of the country, subordinating them to county superintendents, controlled by municipal and State boards of health. Let these agents be authorized to discover filthy streets and habitations, disease-breeding workshops and factories, foul drains and sewers, and poisoned water supplies; let them ferret out the progenitors of contagious diseases, whether brought by vessels from abroad or transported from contiguous neighborhoods by railway, or the offspring of indigenous unsanitary conditions, and, having discovered them, be empowered to isolate and exterminate them; let them, too, track syphilis to its lair, and whether in man or woman, in any way, at any cost, let them make it impossible for another human being to come within its baneful influence. Every case of small-pox is required to be reported and its victim carried to the pest-house or otherwise effectually shut off from contact with his fellows. Why should not every case of this greater evil be likewise reported and its victim cared for in the lock hospital, if need be, if not for his own sake, for the sake of those whom he cannot touch without defiling? The inebriate is lifted from the gutter and the fiery liquid which has stolen away his brains poured upon the ground for the sake of his wife and children. Why should not the poisoned draught be snatched from the libertine's lips, one taste of which may be enough to blight his children and his children's children.

There is an army of doctors overspreading this country and annually recruited by thousands. Why not transform these men, of whom so many idly and hungrily await the prey stricken down for them by disease, into busy workers, keenly on the scent to avert that which now they cannot but welcome?

It is a noble calling to relieve pain and suffering, and to prolong the life of each feeble invalid; but, at the same time, it is ignoble to feel that the physician can only fatten and live by the sorrows and agonies of his fellow-creatures. However earnest, zealous and unselfish in his mission may be the young physician, when he first practices his vocation, soon domestic cares and family needs will make him watch with greedy eyes the advent of disease, which is to feed and clothe his children. With what sharper zeal, what higher pride, what nobler self-respect will he labor if to save mankind from the ravages of disease. Instead of looking with satisfaction upon his daily list of ten, twenty, forty sallow, haggard, crippled wretches, it will become his boast that in the community in which he lives there have been the fewest sick, the smallest death rate, the rosiest chil-

dren, the happiest parents, the most hale and hearty octogenarians. It has been reputed against the medical officers of the corps to which I belong that they can know little about disease since they live chiefly among healthy men, and I fear the longer their service the farther they are believed to be removed from acquaintanceship with the ills which afflict the body. This may be so, but I do not envy my civilian colleague, whose years have been passed amid scenes of suffering and bodily misery, more than half of which he knew to have been unnecessary and preventable, nor do I covet his wealth, so much of which has been wrung from hearts that have needlessly ached. Fifty-two deaths in thirty-five years—five of these from accident—less than two annually per thousand of population, have been the results of careful sanitation on the station to which I am now attached;* and this in spite of insalubrious climatic conditions. But there are no fetid sewers, no piles of rotting dirt, no dark and murky dwellings with foul cellars and festering alley-ways between crowded blocks of buildings. There is no stint of wholesome food and pure water and bright sunshine. There are broad green lanes, where round-limbed children are cradled in the open air, beneath the trees, and over which they romp without fear of their dread enemies, scarlet fever, or measles, or diphtheria. Here come every year a hundred or two of slender striplings who have been injudiciously pampered by doting parents, or pale lads who have, through adverse fortune, lacked all these others had in excess, and who, having slowly added a pound or two to their yearly weight here, under the influence of a regular regimen, hardy exercise, outdoor exposure and judicious mental employment, are transformed into ruddy youths, striding toward vigorous manhood at tenfold their former pace. Forty or fifty of such robust young men annually go forth to return in two years—more than three-fourths—scarred like veterans with venereal wounds—not all with syphilis—though I have seen five cases of its virulent form in a single class, the majority with gonorrhea—that undreaded accident which leaves the stamp of a rheumatic diathesis on some, tortures others with unsuspected stricture, and prostatitis in their after years, and is the father of so much of the uterine disease which afflicts the women they have made their wives.

Those who attended the last meeting of the American Medical Association, at Alanta, must have remarked the unusual prominence given to preventive medicine in the deliberations of that body. The presence of so many of the members of this Association, and of the National Board of Health, as well as the general dread of the anticipated epidemic, had much to do with this. But it is no less gratifying that the medical profession is beginning to recognize and avow that its highest and noblest mission is to prevent disease. Just as the surgeon, to-day, uses the knife when all else has failed and he is powerless to save; when the meddlesome man midwife has sunk to the level of the old-time charlatan, who looked at tongue and pulse and asked about the bowels as a prelude to his routine dose, so will the intelligent physician in the future, sadly have recourse to his scanty pharmacopœia only when he has not succeeded in keeping his charges well. There can never be too many sanitary doctors in the

* United States Naval Academy, Annapolis, Md.

land—and, as they multiply, the dust will settle on the prescriber's bottles, the mould cover their undisturbed contents. But it is folly to exterminate only diphtheria and small-pox and scarlet fever and typhus, and let syphilis, the most prolific mother of evil of them all—send forth her brood of whelps, to be "the cause of more bodily and mental misery than all other shapes of human error combined."

The manner of Dr. Gihon's delivery was much superior to the usual style of those who read from manuscript. The earnestness, and at times eloquence, with which he impressed his hearers, testified how zealously he had given the subject his attention. Bringing forward truth after truth, ugly and unwholesome, still truth, the concentrated attention of the audience strongly evinced he had a large share of their sympathy, as well as approbation, in undertaking that which most men would shrink from. The applause, at the close of his address, was hearty and prolonged.

Dr. Sternberg, of the United States army, expressed his approval of the paper, and was followed by Dr. Bailhache, Dr. B. F. Gibbs and Dr. Campbell, suggesting methods by which the spread of the disease may be prevented.

Immediately on the conclusion of Dr. Gihon's address a motion was made that the President appoint a committee of three who should consider the suggestions or substance of the address and report at the next meeting resolutions looking to the establishing of a plan for protection from venereal diseases, and also that Dr. Gihon be made Chairman of the committee. Adopted unanimously.

(*Proceedings Continued in Next Number.*)

———o———

Increase of Lunacy in Great Britain.—From the report of the commissioners in lunacy for the past year it appears that the number of lunatics is increasing at a very alarming extent. On the first of January last the number of persons registered as of unsound mind in England and Wales numbered 69,885, of whom 7,778 were classed as "private citizens," and 62,108 as "pauper lunatics." Twenty years ago they numbered only 35,762, and ten years ago, 53,277. An examination, too, of the proportion of lunatics to population shows that in 1859 the ratio of lunatics to 10,000 of the population was 18.67. It is now 27.77, or an increase of 50 per cent. The increase, however, is much greater in the case of pauper lunatics than in that of private patients, the increase of the ratio in the former being 53 per cent. and in the latter only 23.6 per cent.

The only satisfactory point to be gathered from the statistics is that, although the ratio of pauper lunatics is steadily advancing year by year, there has been no increase in the proportion of private patients to the population during the past four years. The insanity of no fewer than 21.3 per cent. of the number of men admitted to asylums during 1878 was assigned to intemperance; while among women the proportion was only 7.9 per cent.

THE FIRST CASE OF YELLOW FEVER IN NEW ORLEANS, 1878.

BY THE PHYSICIAN WHO ATTENDED IT.

To the Editor of THE SANITARIAN.

SIR:—In accordance with your request, I herewith inclose account of the first case of *reputed* yellow fever in New Orleans, in 1878.

Truly Yours, E. S. DREW, M.D.

New Orleans, Oct. 15th, 1879.

Pilot Town, August 1st, 1878.

DR. S. CHOPPIN, *Pres. Board of Health:*

DEAR SIR: By my file of city papers, received yesterday, I noticed in the proceedings of the Board of Health, much interest is attached to the death of the purser, Mr. Clarke, of the *Emily B. Souder*, and my course regarding the case, handled without gloves. In justice to myself I feel called upon now to write the same explanation that I gave to Drs. Taylor and Austin, when last in the city, and when I gave a certificate in response to your communication under date of June 4th, 1878. In discussing this case no reference was made to my death-certificate, nor to the certificate I gave in reply to your letter, nor did either Dr. Taylor or Dr. Austin refer to the conversation I had with them—with Dr. T., at office of Board of Health, and with Dr. A., at 124 Canal Street, my former office. My death-certificate stated that Mr. Clarke died of remittent fever, and not intermittent; a copy of which I have, bearing date of May 25th, 1878. Not considering the case of Mr. Clarke of special import, as death from such cause is an every-day occurrence in the city, I did not report the case, except through my certificate, although when I called on you at the office of the Board, I fully intended referring to and giving you full information of the case, but as you seemed hurried to look after official work, I made my visit short. Subsequently I received your letter on the subject, to which I replied. On my visit to the city, I endeavored to see you, calling not only at your official and private offices, but at your residence; failing to meet you I made my statement to Dr. Taylor, at about 11 A. M., and at about 3 o'clock P. M., I met Dr. Austin, and gave him a further history of Mr. Clarke's case. I am convinced that Clarke did not die of yellow fever, and I can and do refer the Board of Health to Drs. Carrington and Patton for corroboration. On the night of the 22d of May, I boarded the *Souder*, at Eadesport, and after having been on the ship several hours, my attention was called to Mr. Clarke. I found him suffering with intense neuralgia headache, slight fever and constipation—the result of too many drinks, the night after leaving Key West, as he expressed it. I found but a meagre supply of medicines on the vessel, and in searching through the chest, not finding such remedies as I wished, I substituted what I could get. When we arrived at Quarantine, I saw Mr. Clarke walking around attending to his duties, the same as the other

officers, and it was whilst I was on shore, in response to a request of Dr. Carrington to visit the Quarantine Hospital and examine several cases of yellow fever from the steamship *Borussia*, that Dr. Patton saw and examined Mr. Clarke, and satisfied himself that Clarke had no fever. After we left Quarantine, Clarke came to me, and asked if I could give him anything to prevent a recurrence of his neuralgia —he then had slight fever. Having neither Dover's Powder, Hoffman's Anodyne, Digitalis, or other acceptable remedies, I used sulphuric ether. The fumes of the drug which I had used in the morning, caused some apprehension on the part of the passengers, they mistaking me for a boarding officer.

When we arrived at the city, Mr. Clarke was resting easy and in a full perspiration, pulse 84, (not having a thermometer I could not obtain the temperature of the body,) and he expressed himself as feeling very comfortable.

Clarke promised to remain on the vessel till I could see him next morning, and appointed the hour of 8 to call. On my call he had gone to town with the Captain. I received his address at the office of the Agent, in the Chamber of Commerce building, on Common Street, between Camp and St. Charles Streets, and then visited him at Mrs. Marshall's residence, 65 North Clerborn Street; I found him with fever, and suffering with severe cerebral pains, such as his case presented when I first saw him. He then informed me that Captain Foote was coming out soon and would bring his doctor (Dr. Holcombe,) who would take charge of the case. I left an anti-febrile prescription to have filled in the event of Dr. H. not coming, and as I had already had charge of the case, and having known Clarke several years, I personally felt an interest in him, and requested he would let me hear from him. I did not longer consider him under my treatment, but on the following morning I received a note from Captain Foote, as follows:

"MY DEAR DOCTOR: Please call on Clarke again this morning.

"Yours truly, S. E. FOOTE.

"*N. O., May 24th.*

"DR. DREW, 69 *Euterpe Street.*"

I called, but as he had received no medical attention for twenty-four hours, I found him in a precarious condition, and so expressed myself to the inmates of the house. I will here take occasion to state that Mrs. Marshall never made the remark to me, as attributed through Dr. Holt's report of his investigation. I would receive no such impertinence from any one. She may have so told the doctor, but never to me. I knew what I was doing, and did not need the advice of any one. By the *Times*, of Saturday last, I find a full contradiction of the report of Dr. Holt, which grossly aspersed my character as a physician and a gentleman. I am only too ready to believe that Dr. Holt misunderstood Mrs. Marshall, because I do not think him capable of malign, and especially do I not believe he would avail himself of an absence to attack the honor of any man. It is too much for any citizen of New Orleans to entertain for a moment the thought, that *I would willingly* jeopardize the welfare of, aye, the *lives* of the people, by falsehood and misrepresentation. The

value of the steamship, her cargo, and the personal wealth of every man on her, would not induce, no, not even tempt me to be guilty of such a crime. In substantiation of my diagnosis regarding the case of Mr. Clarke, I appeal to the judgment of Dr. Loeber, in the case of the second engineer of the *Souder*, who died at the Hotel Dieu, on whose body a post mortem was held. I conclusion, I insist that the *Souder* did not introduce the germs of yellow fever in the city, through the case of Mr. Clarke, nor did she have a case of yellow fever on board on the trip I made on her.

In the report of Dr. Holt, published in the *Democrat* of July 27th, under date of May 31st, I propose to make a short analysis of some statements contained therein: I was not sent for, but was engaged to call on the vessel on the morning of the 23d. Did call. Mr. Clarke had gone, and about 9½ o'clock I saw him at 65 Clerborn Street. Mr. Clarke assured me that Captain Foote would call in another physician, therefore I saw nothing of the case for at least twenty-four hours. I left a prescription, as before stated, to be used in the event of Dr. Holcombe's not coming, with directions to show him the prescription. The interview of Dr. Holt with Mrs. Marshall seemed so convincing to Dr. H., that before (or possibly ignoring my certificate), seeing my report through the Board, he gives to the public an official report which criminates me, Captain Foote and every officer of the ship. I protest in vindication not only of myself, but of the Quarantine physicians, and the officers of the *E. B. Souder*, against a charge, or even a suspicion that the report given by Dr. Holt should impress the people that the *Souder* brought the yellow fever to New Orleans. I did not prescribe for the second engineer, Mr. Elliott—in fact he was not sick while I was on the vessel. Dr. Loeber's opinion, in which I believe Dr. Austin concurred, and both of whose opinions, experience and knowledge of the management of yellow fever, have no superiors in New Orleans, in the case of Mr. Elliott, and the testimony of Dr. Patton bears me out in my diagnosis regarding the purser. I will close this communication with the emphatic assertion that Jno. G. Clarke did not die of yellow fever.

Yours respectfully, etc., E. S. Drew, M.D.

Fallacious Notions Concerning a Stationary Death-rate.—Some short-sighted writers have cited the nearly stationary death-rates in certain populations having good sanitary supervision during the last twenty-five years, as evidence of the failure of all efforts at sanitary improvement. The effect of an increasing population seems to be entirely overlooked by them. It has been too often lost sight of that a stationary death-rate in a rapidly increasing population, is in itself evidence that sanitation has successfully counteracted the natural result of an increasing density of population. For example, in England, as the registrar-general has shown, not only has the natural increase to the death-rate, which might have been expected from the increasingly rapid aggregation of population in large towns, been counteracted, but the rate of mortality has exhibited a marked decline.

THE OLD OAKEN BUCKET.

(As Revised and Edited by a "Sanitarian.")

With what anguish of mind I remember my childhood,
Recalled in the light of a knowledge since gained;
The malarious farm, the wet, fungus-grown wildwood:
The chills then contracted that since have remained;
The scum-covered duck-pond, the pig-stye close by it,
The ditch where the sour-smelling house-drainage fell;
The damp, shaded dwelling, the foul barn yard nigh it—
But worse than all else was that terrible well;
And the old oaken bucket, the mold-crusted bucket,
The moss-covered bucket that hung in the well.

Just think of it! Moss on the vessel that lifted
The water I drank in the days called to mind,
Ere I knew what professors and scientists gifted
In the water of wells by analysis find.
The rotting wood fibre, the oxide of iron,
The algæ, the frog of unusual size,
The water, impure as the verses of Byron,
Are things I remember with tears in my eyes.

And to tell the sad truth—though I shudder to think it—
I considered that water uncommonly clear,
And often at noon, when I went there to drink it,
I enjoyed it as much as I now enjoy beer.
How ardent I seized it with hands that were grimy,
And quick to the mud-covered bottom it fell;
Then soon, with its nitrates and nitrites, and slimy
With matter organic, it rose from the well.

Oh! had I but realized, in time to avoid them,
The dangers that lurked in that pestilent draught,
I'd have tested for organic germs and destroyed them
With potassic permanganate ere I had quaffed;
r, perchance, I'd have boiled it and afterward strained it
Through filters of charcoal and gravel combined,
Or, after distilling, condensed and regained it
In potable form, with its filth left behind.

How little I knew of the dread typhoid fever
Which lurked in the water I ventured to drink;
But since I've become a devoted believer
In the teachings of science, I shudder to think.
And now, far removed from the scenes I'm describing,
The story for warning to others I tell,
As memory reverts to my youthful imbibing,
And I gag at the thought of that horrible well,
And the old oaken bucket, the fungus-grown bucket,—
In fact, the slop-bucket—that hung in the well.

J. C. Baylies.

Editor's Table.

SHALL NEW YORK HAVE A STATE BOARD OF HEALTH?

Three years ago a special committee of the American Medical Association, acting in conjunction with the Committee on Hygiene of the Medical Society of the State of New York, urged upon Governor Robinson the importance of a State Board of Health, representing to him truly the excessive mortality from preventable diseases throughout the State, and the great loss from that cause:

That of the total mortality—69,095—in the State, during the Census year of 1870, 17,596, or more than one-fourth of all the deaths were caused by zymotic diseases—diseases which are for the most part preventable, comprehending 6,930 killed by diarrhœal diseases, 3,403 killed by scarlet fever, 2,029 killed by typhoid fever, and 864 killed by diphtheria—a disease which had so increased in prevalence from 1870 to 1875, as to have destroyed not less than 4,000 lives. And this pest of modern times has gone on increasing in ratio, until during the last year the mortality from it was not less than four times as great in the State of New York as it was in 1870. Consumption too, was shown to be, and still is, killing not less than 12,000 persons per annum, and other pulmonary diseases nearly as many more every year in the State of New York. Nor is this all, by any means. Of the whole 69,095 deaths for the year in the State, 31,602 were infants and children under fifteen years of age—at an age so young as never to have entailed anything but cost and misery—they died without living long enough to render any material return for the outlay necessary to their sustenance from birth to death; and in addition the expense of sickness and 31,602 funerals and burials! Assuming that every one of these premature deaths of 31,602 children under fifteen years of age cost for support, sickness and burial, an average of only $200, the amount of dead loss from premature deaths alone is $6,320,400 per annum. In addition to this was also estimated the value of adult life destroyed by certain preventable diseases. 2,029 persons are killed annually by typhoid fever, a disease *wholly preventable*, and which kills most of its victims in the prime of life—just at that age when the individual is of the most value to his family and the State. The average value of such persons, of both sexes, at a moderate estimate, is not less than $1500. The annual loss to the State from this cause, therefore, is $3,000,000.

This showing of an aggregate loss of nearly $10,000,000, from premature deaths and typhoid fever, without going into further estimates

of the waste of life from other preventable causes, amounting to more than as much more, was graciously received by His Excellency, and commended to the attention of the legislature in his annual message. A bill was prepared, and introduced into the Assembly by Hon. John McGroarty. But, unfortunately, the few members of the legislature who took any interest in the subject, allowed it to be diluted to death. Every health officer in the State seemed to think his office qualified him for membership of any such board, and without such provision *his* member was advised to oppose the bill. The following year, and again during the session of the last legislature, bills were prepared by other gentlemen; but there was the same want of united interest and effort on the part of members of the State Medical Society, and of the legislature, as before.

The Committees of the American Medical Association, and of the State Medical Society, especially intrusted with the duty of pressing this subject, are continued. The dangerous systems of unsanitary public works throughout the State are continually adding fuel to the flame—killing thousands annually, in default of skilled sanitary supervision. Over 2,500 deaths are caused annually by "accidents,"—by *negligence*—which could be and ought to be prevented. The public school buildings throughout the State are in such-wise constructed and conducted, as to be in a great degree promotive of disease and death, for the want of sanitary supervision. Of the more than 12,000 deaths annually from consumption and scrofula in the State, a very large proportion of them have their beginnings in the stifling and stinking atmosphere of public school rooms. The *churches*, too, throughout the State, are mainly constructed without regard to ventilation, or, at best, of a kind that kills from a cold current on the one side, while provided with a hot air evaporator of the life's blood from the other. Theatres and public halls are a little better, because the proprietors of them have a moneyed interest involved; but these are far from being faultless: usually open only when in use, and in this respect, like the churches, keeping on hand a plenary supply of foul air, instead of that which is fresh and pure.

We are not prepared to believe that the law-makers of New York are less wise than those of other States of the Union, and we are persuaded that continuous effort on the part of those who have been chosen by the bodies referred to, with special reference to their fitness for the duty, will eventually succeed in killing enough of the dogs in the mangers of both medical sects and politics, to secure the enactment of a State Board of Health. For if, indeed, it be true, and we believe it is, that a preventable mortality is a criminal mortality, it is high time that the medical men of New York, as well as the

law-makers, entered seriously upon the duty of securing such laws as will be applicable to criminals in high places, for participating in crimes which they take no measures to prevent.

The Redemption of Memphis is an earnest of the near future, inasmuch as the people of that city and the legislature of Tennessee have determined upon the execution of the sanitary work recommended by experts under the auspices of the National Board of Health, which, in brief, comprehends the systematic ventilation and chilling of all the houses in the city, and especially the thorough cleansing and ventilation of all cellars and yards; discontinuance, cleaning out, and filling up with clean earth all privy-vaults; the immediate disuse of polluted water; the disinfection, or destruction by fire of all fomites of whatever nature; cleansing and utilizing the bayous as means of facilitating surface drainage; the removal and destruction of all surface filth, including rotten wood pavements; the provision of a pure water supply; sewerage, subsoil and surface drainage, and impervious pavements.

Roused to a full sense of the importance of the work, notwithstanding the impoverishment to which they were reduced by the ravages of an epidemic of yellow fever of almost unprecedented fatality, so great is the faith of the people of Memphis in the recommendations of sanitarians, that they have asked and obtained the privilege of imposing a special tax of two per cent. on all their taxable property, in order to raise the means necessary to carry those recommendations into effect. The progress and result of this work will be watched with eager interest by sanitarians all over the world, for it puts to the test the influence of local sanitation on a disease, which is said by some who profess to much knowledge on the subject, to bid defiance to all local conditions: in illustration of which views, reference may be made to the reports and discussions of the sixth annual meeting of the American Public Health Association. (See the SANITARIAN, Vol. vii., pp. 5–23). For ourselves, it seems hardly necessary to say, we anticipate a complete refutation of all such views. Another summer's observation of the conditions common to yellow fever in this country, have fortified us in the conclusions we have heretofore frequently found occasion to express, that the conditions of yellow fever are, in general, putrefying organic matter, moisture and high temperature; and wherever these three factors combine in the greatest degree of completeness within certain geographical limitations, there yellow fever is most likely to arise or may be introduced with the greatest facility, and is most wont to prevail. And of all the means at our command for preventing or disarming yellow fever, cleanliness is the most potential and the most enduring, and most of all applicable to vessels in communication with places where the fever prevails

Death-rates per 1,000 inhabitants, annually, from all causes; and from causes which are usually preventable. Condensed from report of National Board of Health Bulletin.

Mortality in United States.	Population.	Total No. of Deaths from all Causes.	Deaths under 5 years.	Annual Death-rate per 1,000.	Consumption.	Small-Pox.	Diphtheria and Croup	Scarlatina.	Measles.	Whooping Cough.	Malarial Fevers.	Cholera	Diarrhœal Diseases.	Puerperal Diseases.	Yellow Fever.
Atlanta.—4 weeks ending Nov. 29th	39,000	42	17	13.1	7	..	..	..	..	..	..	..	1	..	..
Baltimore.—4 weeks ending Nov. 29th	490,000	569	207	18.5	89	..	27	38	..	2	5	..	13	1	..
Boston.—4 weeks ending Nov. 29th	375,000	590	203	20.5	91	..	5	15	..	11	..	..	24	6	..
Brooklyn.—4 weeks ending Nov. 29th	564,448	1,033	340	19.2	129	..	99	4	2	10	12	..	12	3	..
Cambridge.—4 weeks ending Nov. 29th	50,000	57	21	14.8	4	..	8	..	..	1	..	..	2	..	..
Charleston.—4 weeks ending Nov. 29th	57,000	119	31	27.2	21	..	4	..	..	..	3	..	8	1	..
Chicago.—4 weeks ending Nov. 29th	537,6 4	650	301	15.7	48	..	70	58	11	1	2	..	12	4	..
Cincinnati.—4 weeks ending Nov. 29th	280,000	334	128	15.5	46	..	21	20	..	1	2	..	12	..	..
Cleveland.—4 weeks ending Nov. 29th	175,000	202	126	15.4	17	..	19	41	..	1	4	..	3	2	..
Dayton.—4 weeks ending Nov. 29th	39,000	44	18	14.4	5	..	6	..	..	..	..	..	1	1	..
District of Columbia.—4 weeks ending Nov. 29th	160,000	256	95	19.6	54	..	3	2	..	1	4	..	7	2	..
Dubuque.—4 weeks ending Nov. 29th	30,000	14	4	10.4	..	..	2	..	..	..	..	..	1	1	..
Erie.—4 weeks ending Nov. 29th	30,000	28	15	12.1	4	..	1	..	..	..	2	..	1	..	..
Evansville.—2 weeks ending Nov. 29th	37,500	22	8	14.7	7	..	..	4	..	..	2	..	..	..	..
Fall River.—1 week ending Nov. 29th	48,500	20	15	21.5	3	..	..	6	..	..	..	..	..	..	..
Hudson Co., N. J.—4 weeks ending Nov. 29th	199,000	339	111	22.2	46	..	16	27	..	2	6	..	3	5	..
Houston	30,000	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Indianapolis.—4 weeks ending Nov. 29th	97,000	122	39	16.3	18	..	7	4	..	..	5	..	3	3	..
Kansas City	61,000	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Lawrence.—4 weeks ending Nov. 29th	40,000	40	22	13.	8	..	3	1	1	..	..	..	4	..	..
Louisville.—1 week ending Nov. 29th	175,000	59	16	11.6	2	..	6	..	..	1	1	..	1	..	..
Lowell.—4 weeks ending Nov. 29th	52,000	67	22	17.2	9	..	1	3	..	..	..	..	..	1	..
Milwaukee.—4 weeks ending Nov. 29th	124,000	135	53	13.7	10	..	22	..	..	..	3	..	11	..	..
Minneapolis.—4 weeks ending Nov. 29th	52,000	53	23	13.2	9	..	4	..	..	1	..	..	1	..	..
Mobile.—1 week ending Nov. 29th	40,000	18	4	23.5	1	..	..	..	..	..	2	..	3	..	..
New Haven.—4 weeks ending Nov. 29th	60,000	66	18	14.3	13	..	3	..	..	..	..	..	2	..	..
New Orleans.—4 weeks ending Nov. 29th	210,000	394	137	24.4	53	..	7	..	..	3	20	..	22	1	..
New York.—4 weeks ending Nov. 29th	1,097,563	2,023	896	19.2	355	1	70	38	28	22	30	..	58	20	..
Omaha.—4 weeks ending Nov. 29th	30,000	26	11	11.2	1	..	3	2	1	..	1	..	..	..	..
Philadelphia.—4 weeks ending Nov. 29th	901,330	1,012	284	14.7	186	..	52	17	1	2	3	..	14	2	..
Pittsburg.—4 weeks ending Nov. 29th	145,000	221	113	20.3	21	..	51	8	..	3	..	..	10	..	..
Providence.—4 weeks ending Nov. 29th	101,500	181	57	23.2	23	..	13	43	..	..	..	..	1	..	..
Peoria.—3 weeks ending Nov. 22d	40,000	32	8	13.8	3	..	5	5	..	..	..	..	..	..	..
Quincy.—4 weeks ending Nov. 29th	35,000	44	17	15.6	4	..	..	..	..	1	1	..	..	..	..
Reading.—4 weeks ending Nov. 29th	40,109	63	28	20.4	4	..	18	..	..	..	..	..	3	..	..
Richmond.—4 weeks ending Nov. 29th	80,000	113	37	18.4	10	..	11	6	..	..	1	..	4	..	..
Rochester.—3 weeks ending Nov. 22d.	90,000	88	23	16.9	4	..	9	5	..	..	1	..	..	..	..
San Francisco.—4 weeks ending Nov. 29th	300,000	329	98	14.2	47	..	13	3	1	..	3	..	19	3	..
Savannah.—2 weeks ending Nov. 22d	32,656	34	14	27.1	5	..	..	..	..	1	2	..	4	1	..
St. Louis.—4 weeks ending Nov. 29th	500,000	440	146	11.4	66	..	25	4	1	1	17	..	18	1	1
St. Paul.—3 weeks ending Nov. 29th	51,080	25	11	9.1	2	..	2	..	..	..	..	..	3	..	..
Utica.—3 weeks ending Nov. 22d	35,000	24	2	11.9	4	..	..	..	..	..	2	..	..	..	..
Wheeling.—2 weeks ending Nov. 15th	35,000	28	13	10.4	2	..	11	..	..	..	..	..	2	..	..
Wilmington.—4 weeks ending Nov. 29th	44,013	73	30	21.6	7	..	1	7	..	2	3	..	..	..	..
Mortality in Foreign Cities.															
Antwerp.—1 week ending Nov. 22d	169,981	77	..	23.5	..	1	..	..	..	..	..	..	..	..	..
Buda, Pesth.—1 week ending Nov. 8th	309,705	177	..	29.8	..	1	..	..	..	..	..	..	..	..	..
Bucharest.—1 week ending Nov. 15th	211,389	161	..	41.7	..	1	..	..	..	..	..	..	..	..	..
Bremen.—1 week ending Nov. 1st	105,000	29	..	14.4	..	..	..	..	..	..	..	..	..	..	..
Brussels.—1 week ending Nov. 22d	399,482	160	..	20.9	..	..	..	..	..	..	..	..	..	..	..
Belfast.—1 week ending Nov. 29th	212,000	94	..	24.1	..	..	..	..	..	..	..	..	..	..	..
*Berlin.—1 week ending Nov. 15th	1,062,500	433	..	..	..	..	..	..	..	..	..	..	..	..	..
Christiania.—1 week ending Nov. 15th	113,000	39	..	18.	..	..	..	..	..	..	..	..	..	..	..
Dresden—1 week ending Nov. 15th	215,440	86	..	20.8	..	..	..	..	..	..	..	..	..	..	..
Frankfort.—1 week ending Nov. 15th	120,000	5	..	20.7	..	..	..	..	..	..	..	..	..	..	..
Glasgow.—1 week ending Nov. 15th	578,156	215	..	19.4	..	..	..	..	..	..	..	..	..	..	..
Havana.—1 week ending Nov. 15th	195,437	154	..	41.1	..	1	..	..	..	..	..	..	..	..	6
Leghorn.—1 week ending Nov. 22d	97,410	50	..	26.8	..	..	..	..	..	..	..	..	..	..	..
Leipsic.—1 week ending Nov. 22d	145,719	61	..	22.9	..	..	..	..	..	..	..	..	..	..	..
Lyons.—1 week ending Nov. 15th	342,815	145	..	22.	..	..	..	..	..	..	..	..	..	..	..
London.—1 week ending Nov. 15th	3,620,564	1,609	..	23.1	..	..	..	..	..	..	..	..	..	..	..
Liverpool.—1 week ending Nov. 22d	534,338	317	..	30.7	..	..	..	..	..	..	..	..	..	..	..
Leith.—1 week ending Nov. 22d	57,000	30	..	27.4	..	..	..	..	..	..	..	..	..	..	..
Montreal.—1 week ending Nov. 29th	135,000	64	..	24.7	..	17	..	..	..	..	..	..	..	..	..
Paris.—1 week ending Nov. 13th	1,988,806	935	..	24.5	..	22	..	..	..	..	..	..	..	..	..
Rouen.—1 week ending Nov. 22d	104,902	56	..	27.8	..	..	..	..	..	..	..	..	..	..	..
Stockholm.—1 week ending Nov. 8th	169,429	74	..	22.8	..	..	..	..	..	..	..	..	..	..	..
Trieste.—1 week ending Nov. 8th	127,873	83	..	33.8	..	..	..	..	..	..	..	..	..	..	..
Warsaw.—1 week ending Nov. 8th	336,703	178	..	27.6	..	1	..	..	..	..	..	..	..	..	..

* Report for Hospitals only.

Literature.

Vital Statistics of New York.—According to a table just issued by Jno. T. Nagle, M.D., Deputy Registrar of Records of the Health Department of New York, the total numbers of births, marriages, and deaths (with an enumeration of some of the most prominent causes of death), during the year 1878, were as follows :

Total births reported (including 2,192 still births), 27,921 ; marriages, 7,629 ; deaths, 27,008 : small pox, 2 ; measles, 272 ; scarlatina, 1,099 ; diphtheria, 1,007 ; croup, 499 ; whooping cough, 382 ; typhus fever, 4 ; typhoid fever, 245 ; cerebro spinal fever, 97 ; diarrhœal diseases, 2,945 (of these 2,598 were under five years of age) ; consumption, 4,466 ; pneumonia, 2,288 ; bronchitis, 1,184. Of the total number of deaths, 12,410 were of children under five years of age. Deaths per 1,000 (estimating population at 1,083,371), 24.93, being an increase of .43 per 1,000 over the previous year ; but, excepting 1877, the smallest recorded ratio of deaths to the population of any year since 1846 (24.02), at and previous to which time, however, the registration was much less reliable than it is at present. It is very doubtful, however, whether the present death rate of New York and several, if not, indeed, most of our cities is not underestimated by an exaggerated estimate of population ; the custom being to measure the rate of increase in population by the gain between the United States Census of 1870 and the State Census of 1875, or between 1860 and 1870. There is good ground for the belief that our city populations generally have not increased during the last five years in the same ratio as they did in the last preceding—soon after the war. And not only so, but some have actually decreased as pointed out by Dr. Snow, of Providence, R. I., more than a year ago.—See THE SANITARIAN, vol. 6, p. 464.

Kentucky State Board of Health.—First Annual Report, 1878, an 8vo pamphlet of two hundred pages, and three plates; two showing sections of Bowling Green and Hickman, where yellow fever prevailed, and one illustrating the construction of a sewer of Béton, Paris. After a copy of the Act establishing the Board, (which is a copy of the State Health Law of Michigan), follows the Report of the Secretary, giving the minutes of organization, April 3d, 1878, the members being:

James Shackelford, M.D., appointed for six years; W. B. Rodman, M.D., six years; R. W.Dunlap, M.D., four years; Pinckney Thompson, M.D., four years; R. C. Thomas, M.D., two years, and L. P. Yandell, M.D., two years, who declined membership. Pinckney

Thompson, M.D., was elected President, and N. J. Sawyer, M.D., was chosen permanent Secretary.

The first act of the Board was to address a circular to the County Judges of each county throughout the State, requesting them to appoint their several local boards, in conformity with Article Eight of the Act establishing a State Board—that "It shall be the duty of each county court to appoint for their respective counties, a local Board of Health, which board shall consist of three members, one of whom must be a practicing physician in good standing."

The second meeting of the Board was held September 5th, with special reference to measures of relief for the people of Hickman, suffering from yellow fever. Dr. Luke P. Blackburn, having volunteered his services under the auspices of the State Board, was requested to proceed to Hickman, and remain there as practicing physician as long as the people there required his services, and to make report to the Board. At the request of the President of the Board, the Governor directed Mr. John R. Proctor, Assistant State Geologist, also to proceed to Hickman and make a geological survey of the town, and to compile as many facts as possible concerning the prevalence of yellow fever there. Mr. Proctor's official report to the Governor, which constitutes an important part of the State Board's Report (now under review), was reviewed in our last number. Dr. R. C. Thomas, member of the State Board, resident of Bowling Green, makes a special report on the history of yellow fever in that city. Previous to its outbreak there, he was instrumental in establishing a rigid quarantine against Memphis, and had a hospital prepared for the complete isolation of all persons arriving from infected places, and he expresses himself as "confident that not a single indigenous case can be traced back as the result of an imported case." From Aug. 25th, to October 18th there were fifteen imported cases and seven deaths.

The first indigenous case was that of a woman, residence on Adams Street, sixty feet distant from, and fronting the side track of the railroad. From that time to Oct. 12th, there were about twenty other indigenous cases; all of them, except two were in the vicinity of the first one. In the rear of the block of their residences runs the principal (open) sewer of the city, parallel to the side track of the railroad. But besides, midway between, and parallel with this sewer and Adams Street, was a filthy alley, the common receptacle of slops and waste-water, and "where hogs congregated and were accustomed to wallow." Just outlying this was a territory significantly called "Hell's Half Acre; always in a filthy condition from its being the receptacle, to a great degree, of the drainage of the city." Of the two exceptions—farthest from this locality—one, one and a half squares off, was

a woman who washed the clothing of her son, who ran on the trains. The other one, also a woman, resident three squares off, whose husband was a railroad man running between this place and Paris, Tennessee. She was uneasy about him, and frequently went to the depot at twelve o'clock at night to meet him. The report is like that of Hickman: a very intelligent one, with unequivocal inferences in regard to the influence of local conditions in conjunction with meteorological influences. Dr. Pinckney Thompson, President of the Board, also makes a special report on "Yellow Fever in Kentucky." He visited Hickman, confirms the report of Mr. Proctor in regard to the local conditions of that place, and the history of the first cases. He succinctly reviews the observations of various persons on yellow fever in Kentucky and elsewhere, and concludes:

"That yellow fever is strictly an infectious disease, and that it is communicable only through the atmosphere, and not from any contact or association with the sick, or from fomites, except as these agents come in contact with an atmosphere containing the three requisite co-existing conditions. Especially do I think this is the case so far as Kentucky is concerned."

The three requisite conditions referred to are: high temperature, humidity and a foul atmosphere—consequent upon the emanations arising from the decomposition of organic matter.

"One of the essentials to the existence of yellow fever is certainly under human control. A contaminated atmosphere *can* be prevented *largely*, if not altogether. We *can* have comparatively pure air....I would advise that in small towns, where they have no sewerage, no privy vault be less than twelve to fifteen feet deep, and that they ought to have disinfection once a week during the summer months. It is a very common practice, when any unusual sickness occurs in a town, to begin to clean the streets, especially if the sickness occurs in the spring or summer. I could never see the wisdom of waiting until spring or summer to begin this important work. It is true that the active poison in this filth is held in slight abeyance in the cold weather, but in the meantime it is hiding itself in the earth in order to make its appearance in the first few days of warm sunshine. Therefore clean up the towns and keep them clean, and so have a pure air to breathe, and you are free from one of the chief factors of yellow fever....

"The next essential co-existing cause of which we have control is the yellow fever poison, or germs. We may have high temperature, humidity, and contaminated atmosphere, and if we prevent the introduction of the yellow fever poison or germs, we will be saved. The introduction of this poison can be prevented by a rigid quarantine, as was clearly shown, I think, by several examples coming to my knowledge last autumn....Paducah is a city of ten or twelve thousand people, and to say the least, has no very good sanitary surroundings.....It certainly was her quarantine that saved her people. It must be admitted that if Louisville, and Bowling Green, and other

towns and cities of Kentucky had pursued the same course, it would have entailed untold suffering and inconvenience upon the fleeing people of the South; and it is clear to mind that those cities could have saved themselves without this cruel quarantine. A quarantine ought to be enforced against the disease, or its poison, or germs, and not against the people."

The report also contains tabulated statements of some of the boats that went North from New Orleans, during the prevalence of yellow fever in that city, and their dates of arrival at other places subsequently infected. Special papers on: *Are Alum Baking Powders Poisonous?* By Robert Peter, M.D. *Scarlet Fever in Woodford County;* by Drake D. Carter, M.D. *Contamination of Water Supply as a Cause of Disease;* by W. B. Rodman, M.D. *Mortality Tables* of Woodford, Scott, and Robertson Counties; Summary of Registration Reports by the Secretary; and Registration Law.

The Board has made an admirable beginning, foreshadowing a propitious future.

The Progressive Ship Builder* is the well-chosen title of a work which ought to be in the hands of all quarantine health officers, for to no class of persons is information on the construction of vessels with a view to healthfulness, of more value. While by no means specially devoted to this branch of the subject of ship building, for it is a practical work on ship architecture in general,it nevertheless attaches particular importance to it, and describes the constructive conditions of a fever ship so well that no port health officer can well afford to do without it. "What intelligent man," the author asks, "would build or rent a house for his family to live in, with a cesspool in the cellar, and that cellar over twenty feet below the surface of the ground, and all the exhalations and condensations from every part of the interior draining into this cesspool; and the only sewerage from which it could be freed from the poisonous odors, was through the roof of the house, and this same roof the only part of the whole fabric where the family could walk out in the finest weather to see the light of heaven, and no other orifice through the sides of the building than round pigeon-holes less than a foot in diameter, some ten feet above the ground, and no door or other window than these except through the roof?" And yet these are the common conditions of transatlantic passenger steamers! We heartily commend the work to all persons interested in healthful ship architecture, or whose duty it is to recognize conditions inconsistent with the protection of the health of ships' crews and passengers.

*By John W. Griffiths, Practical Ship Builder. Author of "Theory and Practice Blended in Ship Building," "Ship Builders' Manual," Editor "Nautical Magazine," etc., etc. 2 vols., Illustrated. New York: John W. Griffiths, P. O. Box 5125.

Richmond (Va.) Board of Health Report for 1878 shows that "with a steadily increasing population, the rate of mortality has been steadily decreasing," which speaks well for the sanitary administration. The diminution in the number of deaths for the year, as compared with the year previous, was 195, the total number being 1,454. Ratio per 1,000 of population (80,000), 18.40—of the whites (46,000), 14.32; colored (34,000), 23.88.

Of the total number of deaths, 338 were from zymotic diseases, 105 of them being from scarlet fever. 234 died of consumption.

An increase of the force for cleaning the streets, extension of the sewers, and the prevention of public funerals at the burial of persons dead of scarlet fever and diphtheria are urged as important measures for the protection of the public health.

Births registered (exclusive of 159 still births), 1,896. The proportion of still births to those born alive was, in the whole, one to twelve—among the whites, one to twenty-three; among the colored, one to eight.

Dayton Board of Health Report for year ending February 28, 1879, is concisely comprehended in a pamphlet of forty pages, including also a brief of the cost of epidemic diseases, as illustrated by the report of the President of the Board of Health of Louisiana in regard to the epidemic of yellow fever in 1878. *Filth* is emphasized as the underlying condition of all epidemics, the hot-bed which both preserves them and furnishes the food upon which they live. And yet the people of Dayton, as many other populous and refined communities throughout the country, continue the execrable habit of storing up the filthiest of all filth close to their very doors, sleeping apartments and cooking rooms; and, as if this were not enough, making it a veritable filter-bed to the drinking water, so close are the privy vaults to the pumps and cisterns!

Streets and alleys, milk, and special restrictions against the spread of scarlet fever and diphtheria are intelligently discussed, as important subjects of special public interest.

Deaths registered for the year (504), including bodies brought into the city for interment, 606. 121, or nearly one-fourth of those who died in the city, were from zymotic diseases. Ratio per 1,000 (population estimated at 37,500), 16.16. Births, 899.

Medical Chemistry, Including the Outlines of Organic and Physiological Chemistry, based in part upon Riche's Manual de Chemie,* is a 12mo book of 424 pages, on good paper

* By C. Gilbert Wheeler, Professor of Chemistry in the University of Chicago, and formerly Professor of Organic Chemistry in the Chicago Medical College. Second and Revised Edition. New York: William Wood & Co.

and type, well adapted to the wants of medical students, especially commendable for its excellent arrangement of subjects, and conciseness with clearness of treatment. The centigrade thermometer and the metric system are the accepted standards for estimates, and the work altogether well up to time.

Playter's Physiology and Hygiene, for the use of schools and families,* is a rather cheaply gotten up 12mo book, of 168 pages, with 50 illustrations. Professedly, it has been the effort of the author to make a book not too large, nor too technical, nor too elementary and incomplete—faults which he considers common to many excellent works on the same subjects, intended for the same classes of readers. But, unfortunately, it possesses, in common with most books of the kind, too much scissors and too little knowledge of school children's powers of comprehension. A simple physiology must be the physiology of a simple organism—an organism which consists of but few parts, and whose life is maintained by the simplest processes. Even the simplest paragraphs, excised or recast from works on human physiology, are too profound, not only for school children, but for school teachers and family reading, and no amount of trimming can render them otherwise. More attention to the conditions of life and health, and less to the complex structure and functions of the human body, would greatly improve all the school book physiologies with which we are acquainted. And this one is no exception.

Duhring's Atlas of Skin Diseases,† which we have had occasion to commend heretofore as the best work of its kind ever published in America, and equal to the best foreign, fully maintains its high repute. Part VI, just out, comprehends life-like plates of *Syphiloderma (pustulosum), Erythema nodosum, Seborrhœa, and Eczema (papulosum).*—Price, per part, $2.50.

Physiology and Histology of the Cerebral Convolutions, also Poisons of the Intellect,‡ is a valuable contribution to physiological and histological research, laying special emphasis on those points which are settled beyond dispute, while fairly presenting those which are still under discussion.

* By Edward Playter, M.D., Editor of *The Sanitary Journal.* Toronto : Hart and Rawlinson.

† Atlas of Skin Diseases, by Louis A. Duhring, M.D., Professor of Skin Diseases in the Hospital of the University of Pennsylvania ; Physician to the Dispensary for Skin Diseases, Philadelphia ; Dermatologist to the Philadelphia Hospital, etc. Philadelphia : J. B. Lippincott & Co.

‡ By Charles Richet, A.M., M.D., Ph.D. (Former Intern of the Hospital of Paris). Translated by Edward P. Fowler, M.D. 8vo., pp. 170. Illustrated. New York : William Wood & Co.

THE SANITARIAN.

A MONTHLY MAGAZINE.

Vol. VIII. FEBUARY, 1880. No. 83.

PROCEEDINGS OF THE AMERICAN PUBLIC HEALTH ASSOCIATION.

NASHVILLE, TENN., NOVEMBER 18–21, 1879.

(*Continued from page* 34.)

COTTON AS A FOMITE OF YELLOW FEVER.

By J. D. Plunkett, M.D., President Tenn. State Board of Health.

That certain things of animal, vegetable or mineral origin, which have been associated with the sick, or brought from the atmosphere of infection, have been the means of communicating to individuals, more or less remote, the specific virus of certain epidemic diseases, is a fact unquestioned by all intelligent physicians of this age, as well as of past ages. To perfect a catalogue for such materials or fomites by adding such others as later investigations may have demonstrated as belonging to that class, or by striking from the list those which experience has proven do not rightly come under that head, is one of the most important and imperative duties devolving upon the medical profession at this time. The protection of individuals and communities more or less removed from the centre of infection, urgently demands it. Commerce, the handmaid of science, calls aloud in no uncertain tone for relief, and begs that every cord be unloosed and every shackle removed that she may press forward in her mission, without let or hindrance, even in times of dire pestilence, restricted only in such particulars as may be unquestionably necessary for the proper shielding of the people. With the view of eliciting greater interest upon this subject among physicians and public health men everywhere, I have thought it well at this time to bring the matter somewhat before you; and in doing so, I shall restrict the few imperfect remarks which follow to that article of trade which, especially in this section of the United States, preponderates largely over all others, viz.: Cotton and its relations to yellow fever as a fomite.

So far as the present state of medical knowledge relative to this subject extends, it seems to warrant the opinion that the infectious cause of yellow fever is proven to inhere or remain in, and to be con-

veyed by, any package, spaces, apartments, porus or absorbent materials and textile fabrics that *retain and closely confine the atmospheric air and other gases.*

And in conformity to this view we find different writers putting down as fomites of yellow fever such articles as cotton, wool, woolen and linen cloths, furs, hair, ostrich feathers, dry hides, rags, sponges, vellum, all kinds of paper, tallow candles on account of their cotton wicks, animals with wool or long hair, (Dr. John W. Sterling), coal, wood, ores of copper and iron, ballast and stone of all sorts, old ships and new, freight cars, passenger coaches, especially those upholstered, bedding of all kinds (E. Harris), boots, hosiery, silks, empty or filled trunks, and the common clothing even of persons not sick when conveyed, carried, or worn directly *from an infected place*, have been known to carry and communicate yellow fever virus (E. Harris).

This list could be greatly extended, but for our present purpose it is unnecessary.

The hypothetical capability of raw cotton (ginned or unginned, pressed or unpressed) to absorb or imbibe pestilential virus, and thereby become the medium through which epidemic diseases may be or have been conveyed from point to point, or even from one country to another, was recognized far back in the history of medicine.

The plague, which swept with such destructive fury over London in 1665, and which proved so disastrous to the entire population of that wondrous metropolis, was supposed to have been introduced into London by importation of cotton from the East. And while this fact may not have been sufficiently clear to have placed it absolutely beyond all question, yet so impressed were the authorities of England with its probability that "During the plague of 1835," says Dr. Laidlaw, "which preserved its epidemic character from the beginning of January till the commencement of June, and during which period upwards of 9,000 persons in the town of Alexandria must have suffered from the disease (200,000 persons it is computed having fallen victims to the disease in the whole of Egypt within this period of time), vast quantities of cotton was embarked on board of British merchant vessels and sent to England. The number of vessels so clearing for England was twenty-five, which carried into Great Britain no less than 31,000 bales of cotton. Upon arriving in England, these vessels had to perform a long quarantine (as we are informed,) for the purpose of purifying the cotton from the latent fomites it was supposed to contain; and under orders of Council, Chap. XXXII., it was made the duty of quarantine officers to have ripped open all bales of cotton, and by free handling to daily expose it to sunlight and air, emphasis being given especially to handling of the *interior of the bales.* (Extract from report on Quarantine by the General Board of Health, presented to both Houses of Parliament by command of her Majesty—London, 1849.)

The rigid enforcement of these precautionery measures coupled with the fact that the British Isles enjoyed an absolute immunity from the dreaded pestilence during this entire season, would seem to warrant the assumption (in the absence of positive proof to the contrary) that the same be recognized as an important factor in the result obtained, if not wholly the means of their exemption.

While the weight of modern pathological teachings is clear that the Oriental plague and yellow fever are two entirely different diseases, each having a distinct specific poison of its own, yet this is not always so, as we find a lack of precision of description in the older writers and a confounding of diseases which has led some, eminent in the profession, to argue with much force and plausibility that the numerous epidemics of contagious fevers, which occurred in various parts of Europe during the first fifteen centuries of the Christian era were the same in cause, and differed in effect only through the modifying influences of atmospheric conditions, locality and environments—the older writers considering such desolating scourges under the appellation of the plague—while later contributors speak of them as being in many instances typhus, or, as others prefer, typhus icterodes, which term with us is a synonym of what, for want of a better name, we call yellow fever. As nosology grew more perfect, often under our own appellation (as used by the older writers), there was found embraced several distinct diseases, which in time were accurately described and appropriately named. So that we find the first recorded epidemic of yellow fever *recognized as such*, occurring in Egypt in 1797, at La Guaira.

This epidemic is, with much plausibility, referred to the overflowing of the river having the same name. (Report of the Sanitary Commission on the yellow fever in New Orleans in 1853, by E. H. Barton, M. D., page 337.)

The historical proverb, "what has been may be again," has its counterpart in what has been may have been before and if, as in this instance, we find an epidemic of yellow fever originating *de novo* in Egypt after the overflow of the river La Guaira, would it be a violent assumption to infer that yellow fever had occurred there many times before, and therefore, it too, had its beginning far back in the twilight of human history, and from time to time, has scourged the race, thus seeming verily to be the pestilence of old which "walketh in darkness and wasteth at noonday." A recent writer on yellow fever draws the following striking parallel between the oriental plague and yellow fever, from which it will be seen that there are many characteristics in common. "The plague occurs on the subsidence of the Nile; so does the yellow fever on the subsidence of the Mississippi. The plague localities are surrounded with ponds, stagnant canals, with decaying vegetable matter, exhaling their poisons into the atmosphere, accompanied with great humidity; such is precisely parallel here. Attacks of plague most frequently take place at night; the same is generally true of yellow fever. The plague is sometimes marked with jaundice (or Ictirodes), and black vomit, and yellow fever sometimes has buboes and carbuncles, as was the case here last year. One attack usually exhausts the susceptibility to the recurrence of the disease in many instances, much more certainly in yellow fever than in plague." (Report of the Sanitary Commission on the yellow fever in New Orleans in 1853, by E. H. Barton, M.D.)

However, be this unity of cause the same throughout or not, for our purpose at present, it is immaterial, as the history of a fomite, as a means of disseminating or conveying the specific poison of our epidemic diseases, is practically its history so far as we know, in connec-

tion with that of all other diseases coming under that denomination; and we have seen that cotton brought from the distant East, where an epidemic of plague was at that time prevailing, was looked upon by the English health authorities with such suspicion as to induce them to institute concerning it the most pains-taking and laborious methods for its purification.

The recognition of cotton as one of the class of extra-hazardous fomites is well nigh universal, as its capacity to transmit or communicate yellow fever or other infectious diseases has, up to this time, scarcely been questioned.

In 1859 a select committee of the Chamber of Commerce of New York city, reporting upon the quarantine laws of New York harbor, invited before them during their investigation a number of the most eminent physicians of that city, including the Health Officer and Health Commissioner, and, among other questions propounded to these medical gentlemen upon that occasion were the following:

1. Would you deem it safe for vessels from ports where yellow fever prevails, having had no case of fever among their crews while in their ports of departure, or on their passage or after their arrival in port, with a passage of not less than ten days, arriving between the first day of April and the first day of November, to proceed at once to the wharves of that city? and

2. If exceptions are to be made, with what cargo and under what circumstances should they take place? And so impressed was this committee as to the dangers attaching to cotton that they singled it out from all other articles of freight, and formulated a distinct interrogatory regarding it, to-wit:

3. If cotton is discharged at quarantine, would you permit it to be lightered to the city at once? To which the following answers were received: Cotton coming from Charleston and taken on board ship from a *healthy part of the city*, I should infer, would not acquire any dangerous properties, if it did not remain more than a week at any of the wharves of that port. (Dr. A. Stevens.)

"A vessel having on board only such persons as have been protected from the fever by previous attacks, or by long seasoning, might safely proceed to the city with her cargo, provided that cargo did not consist of substances that are proved to contain confined air; or, consisting of such porous materials, it were ascertained that they had not been deposited or exposed in any infected locality, the ship itself having been but slightly exposed to such localities, having taken its cargo by lighters or otherwise when lying far out in the stream or otherwise removed entirely beyond any infected place, and, *particularly, if the sugar, cotton*, or other suspected materials had come directly from plantations, *without storage in a sickly port.*" (Elisha Harris, M.D.)

"Quarantine assumes that particular articles of commerce, whether of the raw or manufactured material, are capable of absorbing or imbibing pestilential virus, and that thereby epidemic diseases are conveyed from one country to another. Among the articles supposed to be particularly adapted for the absorption of this poison are cotton, wool, etc, etc." (J. M. Sterling, M.D.)

"Cotton is often brought from the country by railroads or steamboats, and transhipped at once to this port. If the account of the

cotton should establish this fact, it being also in good condition, it might properly be lightered at once to the city. But if in bad condition and long stored in an infected district of the port from which it is shipped, it should not be permitted in the city before November." (Jedediah Miller, M.D., Health Commissioner.)

Much additional testimony could be adduced, if it were thought desirable, to further fortify the assumption that underlies the remarks which have been made above, namely: that cotton, from its peculiarly porous flocculent nature, is particularly adapted to the absorption or imbibition of the infectious or propagating cause of yellow fever, by readily taking up and retaining the atmospheric air of an infected locality, which, we are warranted, both by direct and circumstantial evidence, in believing is invariably the vehicle, or medium, for the transportation of this specific virus. Now, notwithstanding the almost universal opinion among medical men that cotton should rank among the most dangerous class of fomites, or materials, by which the air and the infection are conveyed from infected localities where yellow fever exists, yet, having exhausted all sources of information at our command bearing upon this subject, the strange and remarkable fact is brought to light that not a single case of yellow fever is recorded as having originated from contact with cotton carried from an infected place. Whether this is simply an accidental omission in the chain of evidence regarding this invidious and deadly disease, or whether it indicates an important and valuable scientific truth, through which there may yet be discovered to us the fact that in unwrought cotton there is an attribute (in fibre, or volatile oil, or what not), which, like tobacco, neutralizes the virus of yellow fever, and, consequently, renders it incapable of conveying or communicating that disease, are questions of the greatest moment, and, in their solution, they become matters of the highest significance to the epidemiologist as well as to commerce herself, who, should these conjectures be verified by further investigation, will be relieved of fully one-half of the present embarrassments which beset her pathway in times of pestilence.

However, until this question is finally determined by the introduction of proof which is clear and convincing, the quarantine officer will continue as he has in the past, and justifiably so, to treat cotton as a probable source of danger in communicating disease in time of epidemic; for with such officers it is a motto, if err we must, then err upon the safe side, or, if a doubt there be, then give the public the benefit of the doubt.

THE MEMPHIS YELLOW FEVER EPIDEMIC OF 1879.

By Dr. G. B. Thornton, President of the Memphis Board of Health.

The appearance of yellow fever in Memphis during July last and the results which have followed its spread have attracted, perhaps, more attention than those of any epidemic of the same magnitude which has ever occurred in this country.

The causes of its outbreak involve questions of profound interest, not only to the citizens of Memphis and country immediately adjacent, but to the entire Mississippi valley, whose feelings of security and vast commercial and social relations have been so materially threatened or interfered with by its re-appearance in its very heart.

It is of particular interest to the American Public Health Association, to whom the people are beginning to look as the body which gives direction to legislation pertaining to public hygiene.

The question of importation or of local origin is not definitely settled by the resident profession. Each side has its advocates; nor am I myself satisfied as to the date and exact locality of the appearance of the first case.

In every epidemic of yellow fever which has preceded this one, there has been no trouble in tracing the disease to direct importation. Similar questions arose with the epidemic of yellow fever in New Orleans last year. (See article by Dr. Jones in New Orleans *Medical and Surgical Journal* for March, 1879.)

The first case was reported to the health office on the 8th of July. The presumption is that it had been sick at least four days before death. An autopsy proved beyond question the nature of the disease.

On the morning of the 10th, a number of suspicious cases were reported, five of which proved to be yellow fever. These six cases were in three distinct localities in different wards of the city. The first one reported was in the Sixth ward, No. 204 Desoto Street, (Mulbrandon), three at one house in the Tenth ward, at No. 425 Wellington Street, (Judge Ray's), both in South Memphis, and two at one house in the Eighth ward, No. 55 Bradford Street, (Tobin's), in the extreme northeastern portion of the city, at least a mile on a direct line from either of the other two.

Two of these cases died during the night of the 9th. They were not reported to the health office earlier than the morning of the 10th. The physicians in attendance seemed not to have been sufficiently confirmed in their diagnosis of yellow fever to justify them in reporting these as such sooner. There had been no known communication between any of these cases. They were among people who had neither business nor social relations with each other. Judging from the clinical history of the cases, each must have contracted the disease about the same time. One died on the afternoon of the 9th of July, two on the night of the 9th. The three were visited by different physicians, who, at the time, were not thrown together professionally, consequently it is not reasonable to suppose that the infection was conveyed from one to the other, nor is there evidence to prove that they contracted the disease from the same point about the same time. I am strengthened in this opinion from the occurrence of cases later in the summer and fall within the city and suburbs, when the infection could not be traced to direct communication with the sick, and where very scrupulous precautions were taken to prevent contagion. One death occurred on the night of July 8th, at 81 Clay Street, in the Tenth ward, in the neighborhood of the cases first reported (at 425 Wellington Street, Judge Ray's), and which was classed under the head of suspicious cases, but was treated as malarial fever. The attending physician afterward stated it was his belief that it was yellow fever. This belief was confirmed by several parties contracting the disease a few days after the death occurred who lived in the immediate neighborhood, at 86 Clay Street, and were with the party while sick. Errors of this kind, if there was one, have repeatedly occurred

in the beginning of epidemics of this disease in the practice of experienced physicians. The gentleman above referred to may be justly so classed, for his experience has been acquired from four epidemics, in one of which he was the subject of the disease himself. I mention this circumstance as one throwing some doubt as to the reported case on the 8th being the first which occurred. After the 10th no more cases were reported until the 15th, and two of these were people who lived at 86 Clay Street, just referred to.

The disease has appeared in houses in the suburbs which were infected last year, among people who had no direct communication with the sick this year, and who observed very rigidly local isolation. Whether the infection was in the houses or in the furniture, bedding, carpets, clothing, etc., is an open question with me, though, if contracted from either, I am inclined to think it was from the latter. All claim that their houses were thoroughly ventilated and exposed to the cold weather of last winter; many that artificial means of disinfection were used.

The house at 204 Desoto Street, (Mulbrandon's), Sixth Ward, and 425 Wellington Street, (Judge Ray's), Tenth Ward, and 53 Bradford Street, (Tobin's), Eighth Ward, in which the three first cases reported occurred, were unoccupied last year during the epidemic, consequently, we cannot attribute the origin of those cases to house infection. I have it, on credible authority, that when Tobin and wife returned to the city after the epidemic of last year, they purchased and used some second-hand bedding, and that some bedding, and, perhaps, clothing was used in Mulbrandon's house which had been used the year before during the epidemic by relatives who died of the disease. Whether any means of disinfection was used or not I am unable to state. In the City Hospital, an institution I had charge of, there was the most thorough infection of everything pertaining to it in the way of bedding, ward furniture, etc. All available means of disinfection were used, not only while the epidemic lasted, but afterwards, of wards and ward furniture of every character. No case has occurred there this year which can be justly attributed to the infection of last year, though many of the same articles are in use. While this circumstance does not prove that the infection could not be held over, it is at least strong evidence that goods once known to be infected can be disinfected.

I was informed by Dr. W. L. Coleman, an inspector of the National Board of Health, that he had evidences of importation which, to him, were conclusive. I hope he will demonstrate it as a matter of fact. I have seen no report from him on this subject if he has made one, nor from any one else; consequently am not prepared to discuss the importation theory. Being not only officially interested in Memphis, but personally so from long residence, and, as a consequence, from social and business interests, I am very reluctant to believe the disease originated among us, but the evidences of local origin are to me so positive, and those of importation so negative, as far as I know them, I am forced to the conclusion that the disease arose from the infection of last year, which remained dormant until the atmospheric conditions favored its development. If such is the case, it does away with the theory of some, that, under these circumstances, the disease

loses its specific character and will not reproduce itself, or that epidemic can only be produced by fresh importations. [See conclusions of the Board of Experts authorized by Congress to investigate the yellow fever epidemic of 1878, page 15, paragraph 21.]

If the disease was introduced here last June or July, as the case may be, from whence did it come? It is reasonable to assume that the National Board of Health would have been informed of its existence south of Memphis, or anywhere else in the country, if such had been the fact. At a convention of the Sanitary Council of the Mississippi Valley, held in Memphis, April 30th, it was agreed that all Boards of Health there represented should be promptly notified, by cipher telegram, of the appearance of the disease in the locality of either Board. That cipher was never furnished me, and, consequently, I did not communicate the knowledge of the first case to the different Boards, as agreed by the convention.

The National and State Boards of Health were to be notified of the first case immediately by their respective resident members, Dr. R. W. Mitchell, of the former, and Hon. John Johnson, of the latter. How the report got into the press dispatches I do not know.

The object of this cipher telegram was, as I understand, to give timely notice to those in authority to take such steps as they might think advisable towards quarantine.

I being an advocate of quarantine, as I am now, insisted on the convention pledging itself to it under these circumstances. Fortunlately the National Board of Health now assumes this responsibility, and will co-operate with any State, county or municipal Board of Health which adopts and enforces its regulations and calls upon it. The past epidemic has demonstrated very conclusively the utility of this organization, not only in preventing the arbitrary and irresponsible organization known as "shot-gun" quarantines, the outgrowths of panic, which would be ridiculous were it not for the serious inconvenience they entail upon commerce and travel.

The experience of this epidemic, the first one the National Board has had to deal with, has not only had the moral effect of allaying public apprehension and given confidence in preventing the spread of yellow fever by the ordinary lines of transportation, both by river and rail, but has demonstrated the practicability of allowing commercial intercourse without serious impediment and very little inconvenience.

It is not reasonable to suppose that a perfect system of quarantine inspection of freight and passenger travel, especially under the impulse of harm from impending danger, could be enforced without some delay and inconvenience. Defects which experience has developed will, no doubt, in due time, be corrected, and the country in future will not only feel a sense of security which it has not heretofore had, but enjoy the great practical good which must result from intelligent and efficient co-operation of an organized Board of Health system.

As soon as the disease was recognized, all available means of disinfective isolation and depopulation were practiced, and for nearly a month the disease seemed, with the exception of a few cases, to be confined to the neighborhoods where it first appeared. This gave reason to hope that there would be no general epidemic over the city, and it was not until August 10th that formal announcement of a gen-

eral epidemic was made. It was then impossible to say that any portion of the city was not infected, unless it was the Ninth Ward, or what is known as Chelsea, a ward more isolated than any other, and occupied almost entirely by residences, many of which were vacated.

Appearing as it did in July last at four known points (and perhaps others) in thickly populated neighborhoods in different portions of the city at or about the same time, among a people susceptible to its influence, in an atmosphere favorable to its spread, disinfection and isolation alone, as heretofore practiced, cannot be relied upon to eradicate, or, as technically termed, stamp it out. These means have failed repeatedly as a radical measure, when the disease has become firmly established under the above circumstances. (For stronger test of disinfection see New Orleans *Medical and Surgical Journal* for March, 1879; article by Dr. Joseph Jones.) This year, in that city, these agencies seem to have proved more successful; perhaps the meteorological conditions were not so favorable to the spread of the disease, or those means for combating were better than heretofore. The resident population there is not so susceptible as that of cities further north. While disinfection has proved inefficient heretofore in Memphis in stamping out the disease, not only in the last but also in the preceding epidemic, in both of which it was promptly and energetically practiced, I believe it can be eradicated by a thorough disinfection of household effects and infected places during the winter, and by a proper local sanitation. When this is accomplished, Memphis, to have yellow fever again, must have it, as it had on every occasion previous to this one, by importation.

The disease may have been imported this year. If such was the case, the epidemic was, in my opinion, due to two causes, importation and local origin.

The work of disinfection and destruction of infected goods was actively and persistently practiced by the Local Board of Health from the date of the first death until Aug. 16th. After that time, as per agreement between State and local boards of health at the McKenzie conference, the State board assumed this duty, and, with the assistance of the National Board, prosecuted the work by the most liberal expenditure of disinfectants applied in what is thought to have been the most approved methods.

For a detailed account of this work, reference is made to the official reports of Dr. J. W. Ross, Inspector of the National Board of Health.

In August last, in response to a circular letter received from Dr. Turner, Secretary of National Board, inviting reports on the sanitary condition of Memphis and sanitary work being done there, I addressed him a communication, of which the following is an extract, and which is not irrelevant to this part of my subject:

"As far as we are capable of judging from external appearances, Memphis at present is as cleanly as any city in the country of the same size—perhaps more so. There is not a public thoroughfare in or about the city that can be considered in an unsanitary condition, unless it is from the decayed and decaying portion of the Nicholson pavement blocks. The work of cleaning streets and alleys was commenced in February, immediately after the organization of the Board

of Health, and this feature of sanitary work has never stopped. The sanitary condition of private houses, aside from the objectionable system of privy vaults, will compare favorably with other cities, North or South."

It is a questionable point with me whether these vaults had anything to do with the origin of yellow fever here this year, though in the absence of proofs of importation I am of the opinion that the appearance of the disease was due to influences from last year's epidemic.

Whether these influences were from the miasms of privy vaults, impure sewers, polluted soil, or from fomites of woolen goods and bedding which had been used by the sick of last year and not properly disinfected afterwards, I will not now discuss. The general impression of the profession here is that the disease had its origin among us, and I at present participate in that opinion. The work of local sanitation is in daily progress, and everything is being done that is justifiable at this season of the year, and can be done under the existing circumstances. The work of disinfection, not only of houses where yellow fever occurs, but of all privy vaults, is being done under the immediate authority of Mr. John Johnson, member of the State Board of Health, as per agreement made between State and local Boards of Health at McKenzie, August 16th.

These vaults, many of which were emptied of their contents during the past winter and early spring, are now being disinfected with strong solutions of sulphate of iron and lime.

The disinfection of bedding, clothing, carpets and rooms in which yellow fever occurs, is promptly and efficiently treated with zinc-iron solution and fumes of sulphur. Bedding and fabrics that are so soiled as not to be rendered harmless by this process are destroyed by fire in a furnace constructed for that purpose. These goods are first saturated with carbolic acid and carried in covered carts from the houses where used to this furnace, which is located under the bluff near the river, and there destroyed by a process which is thought to prevent the spread of the infection from them.

The work of taking up a portion of the wooden pavement and replacing it with stone is now in operation, and will be continued as fast as circumstances admit until it is all removed. The wooden blocks from the street are burned in the furnace as any other infected material, thereby serving a useful end as fuel. It is intended as soon as the weather is cold enough to justify the work, to have every privy vault in the city emptied of its contents and filled with earth. These are to be replaced by earth closets when it is impracticable to connect with a sewer and use a water-closet. There are two things in which Memphis is defective in regard to sanitation, and all sanitary work is but secondary compared with these essentials. That is, a proper underground sewerage and a more thorough surface drainage. The sewerage at present is so limited as to be totally inadequate to the necessity. The topography of the ground is such as to facilitate the former and afford a very perfect system were the means at command for the work, The latter would follow as a consequence when the contemplated system of paving is complete which is now in progress. The soil here is of a light porous character, which facilitates

sipage, consequently there exists in many localities an injurious soil saturation, which in some instances has rendered impure some cisterns improperly constructed and in close proximity to the vaults."

The substitution of either dry earth or water-closets in place of the very objectionable system of vaults will be enforced, at the expense of property owners, this fall and winter as rapidly as possible.

As so much has been published in various newspapers throughout the country, both editorially and by correspondents, about the neglect of sanitary work in Memphis, it is but simple justice to the present authorities to briefly refer to the condition of the city when the present government was formed.

The sanitary condition of Memphis was never as good as it should have been. With very good natural advantages, there has not been a proper system of sanitary work perfected to entitle it to a fair trial of resisting epidemic influence of any character.

The last epidemic of yellow fever was uprecedented in this locality, and all attempt at sanitary work worthy of mention was suspended during the epidemic until the following February. The Board of Health was disorganized by the death of Dr. J. H. Erskine, the Health Officer, and the illness of the President and Secretary, Drs. Saunders and Brown, and when reorganized, after the epidemic, it did not receive that support which the necessities of the situation demanded. I suppose the neglect of this all-important work was due to the fact that those in authority anticipated what was then in contemplation, a radical change in the form of government—that is, an abolition of the city charter by the State Legislature, which convened in January, and perfected this change on January 29. On the abolition of the charter a new government was formed, known as a Legislative Council, to administer the affairs of the city, now designated as the taxing district.

This Legislative Council was not organized until Feb. 8. (Note—thus causing an interregnum of about three weeks between the operations of the two governments). It received none of the assets of the old corporation, nor assumed any of its liabilities; consequently it commenced with nothing in its treasury, and with no immediate credit, except what was granted to it by the individual indorsment of its members. It formed its ordinances and organized the several departments of government as rapidly as practicable.

The Board of Health was organized late in February, and at once commenced sanitary work. I will not attempt to describe the unsanitary condition of the city at this time—indeed, no practical good would result from it. Suffice it to say, that for seven months in a city with a population of forty thousand no public work, for reasons above given, had been attempted, and very little by private parties.

Consequently, for the new government to put the city in a thorough sanitary condition in the brief space of four months, for several weeks of which all work was suspended pending a decision of the Supreme Court as to the legality of its existence, was simply impossible. However, its members seemed impressed with the importance of sanitary reform, and were disposed to enforce the health ordinances and execute the orders of the board of Health as far as practicable.

The sanitary condition of the city on the outbreak of the yellow fever in July, aside from the decayed Nicholson pavement, as far as

could be judged from appearances, was as good, if not better, than it had ever before been. All the streets and alleys had been thoroughly cleaned up in February and March, and an efficient system of garbage carts, modeled after similar systems in other cities, for the removal of daily accumulations, was in successful operation. This nature of sanitary work had never before been tried in Memphis. In addition to this public work, a great deal of sanitary work was done by private individuals, a system of inspection being enforced by the Board of Health, through a limited number of sanitary police detailed from the regular police force. In May the operations of the Board of Health were supplemented by an organization of citizens known as the Auxiliary Sanitary Association, with Dr. R. W. Mitchell, of the National Board of Health as its chief sanitary adviser. This Association exhibited commendable zeal in the work it undertook, and rendered some valuable assistance to the Board of Health. I will here take occasion to refer to an official communication of Sept. 22, published in the *National Bulletin of Health*, of Oct. 4, and if possible disabuse the writer's mind of some erroneous impressions he seems to be under, or at least answer the charge he makes in the following paragraph in speaking of Memphis: "Sanitation as there practiced has not, in my judgment, been directed with the intelligence and zeal, her terrible lessons might have been expected to arouse. The opposition to the enforcement of rule No. 6, concerning cotton and the tearing up of the Nicholson pavement during the epidemic are quite in keeping with the removal of fever-poisoned refuse and night soil during July last.

"Dr. Johnson, of the Board, and myself deprecated this latter action during our visit in July last and discountenanced the proposition then mooted to remove the Nicholson pavement before the advent of cold weather."

The only privy vault cleaning after the first of June was in those cases where it was thought absolutely necessary, and then where disinfection and deodorization was practiced at the same time, and all night soil was conveyed to the designated point on the river in air-tight barrels.

This work was being done, then, to this limited extent after a conference with Dr. Mitchell, of the National Board, who was actively cooperating with the local Board through the auxiliary association.

On June 12, the Board of Health published an order forbidding any more work of this character unless by special permit, when it was done only in extreme cases and then under police surveillance. In regard to the tearing up of the Nicholson pavement during the summer, none was done until Aug. 29, after the disease had become epidemic through the whole city, and then only on a portion of a street, along which there were only warehouses or cotton sheds, with the exception of a few houses, which were but partially occupied. Consequently, this could have had no influence in inducing the outbreak of yellow fever in July, nor did it influence its spread after it did appear. In this connection I will here introduce a communication made by myself to the legislative Council on this subject, which I presume elicited the comment made by the correspondent of the *Bulletin*:

MEMPHIS, June 5, 1879.—Honorable Legislative Council—Gentlemen : In compliance with your instructions to give you an opinion in regard to the danger involved to the public health in the removal of the Nicholson pavement on Madison street and replacing it with stone, from Main street to the Charleston depot, at this season of the year, I have the honor to submit the following :

The sanitary condition of this street at present is perhaps worse than any other in the city, owing to the fact that so much of the present pavement is decayed and already displaced. The removal of this and replacing it with stone by the plan proposed does not, in my opinion, increase the liability to disease, as no grading of the street is proposed and the earth is not disturbed, the grade being already fixed. The space uncovered by the removal of the wooden pavement is to be recovered the same day, or very soon, by stone, and the wooden blocks burned immediately or otherwise disposed of so as not to be prejudicial to health. Leaving out of consideration the imperative necessity for the improvement of the street for the commercial interest of the city, I do not think the sanitary condition of the neighborhood will be made worse while the work is being done, but will be materially improved after the work is completed. In view of these facts, the present very bad sanitary condition, owing to the decay of the wooden pavement, there being no necessity for interfering with the earth for the purpose of changing the grade, the rapid mode to be employed in replacing it with stone, the great sanitary advantage obtained after the work is done, and the imperative necessity for the improvement to the commercial interest, I have no hesitation in recommending the immediate execution of the work.

Respectfully, G. B. THORNTON, M.D.
President of the Board of Health.

The imputation that this work could have created yellow fever in Memphis is too absurd to admit of discussion. That it may have developed endemic diseases, towards which there may have been a predisposition, or intensified any disease which did prevail, is possible, but in this instance there are no facts to prove that such was the case. When the circumstances, as expressed in the communication, are considered, I hold that the advice was justifiable. Especially when there was but one of the cases, that of Mulbrandon's, at 204 Desoto Street, which occurred on one of the paved streets, the other two localities where the first cases were reported being distant several squares from the pavement. One Tobin, at 55 Bradford Street, on one of the most elevated positions in the city, and the other Judge Ray's, at 245 Wellington Street, a wide, sloping street, more in the suburbs, though within the corporate limits.

As to any opposition to rule 6, the Legislative Council was only represented during the epidemic by Chairman D. S. Porter, the other members being absent.

He, both personally and through the local board, co-operated with and supported every order of both National and State Boards of Health, and enforced their rules as far as practicable. Now that the epidemic is over, there can be no just objection to stating that while those in authority at Memphis duly appreciate the efforts of the State and National Boards to do all in their power for the good of Mem-

phis and the people of Tennessee and adjacent States, and make proper acknowledgment for such services, they mean no disrespect and do not criticise their action in any spirit of fault-finding when they state that the preservation of the yellow fever contagium in baled cotton is a purely theoretical question which is not verified by pre-existing facts, and the onus of proof rests on those who raised the question to show one instance after the amplest opportunities for doing so are given, where seed or lint cotton handled in an infected locality by the ordinary means of ginning, baling, or compressing, has been the medium for the transmission or propagation of the yellow fever contagium.

The estimated population of Memphis at the commencement of the epidemic, according to the reports of Col. Cameron, Superintendent of Camps, was 38,400. My estimate was that it was rather over 40,000 than under. There were in the several camps adjacent to the city, within five to ten miles, 24,800. According to his report, the population was reduced by depopulation to 18,500, of which 14,500 were blacks. I herewith append a tabulated statement compiled from the records of the Board of Health, showing the number of cases reported, also the number of deaths; prompt and active depopulation prevented a repetition of a similar epidemic to that of 1878.

CASES.

Months.	White.	Colored.	Total.
July	153	35	188
August	320	363	683
September	240	208	448
October	132	73	205
November	8	—	8
Total	853	679	1,532

DEATHS.

Months.	White.	P'r C't.	Colored.	P'r C't.	Total.
July	52	33.9	5	14.2	57
August	134	41.9	43	11.8	177
September	116	48.3	43	20.6	159
October	65	49.2	15	20.5	80
November	12	1.50	—	—	12
Total	379	44.4	106	15.6	*485

*31.7 per cent.
This report is made up to include Nov. 15th, 1879.

QUARANTINE IN ARKANSAS.

Dr. R. G. Jennings, of Little Rock, read a paper on "Quarantine and its Results in the State of Arkansas in 1879," of which the following is a synopsis:

In 1878 quarantine was established by the Little Rock Board of Health, and, though possessing no legal authority beyond the extent of five miles, yet, through the concert of action of local boards of health in other incorporated towns, and the generous support of the people, who hoped to escape the scourge of the yellow fever by this means, an effective quarantine was maintained and rigidly enforced during the year, that proved a formidable barrier against any great

extension of yellow fever in Arkansas. It, however, was transported to Augusta, in Woodruff County; Helena, in Phillips County, and Hopefield, in Crittenden County—opposite Memphis—where, though late in the season, the disease displayed itself with energy, and at the latter place with considerable fatality.

[Then follows an account of the effort made to secure the passage of a law creating a State Board of Health, which effort failed; and thereupon the State Medical Society appointed nine of its members to act in the capacity of a State Board of Health, as far as practicable under the sanction of the State Government.]

These gentlemen, constituting this Board, were all men of prominence in the profession, representing the interests of the various sections of the State, but, possessing no legal authority, remained passive until called into action by the proclamation of the Governor.

The Local Board of Health of the city of Little Rock, upon the first appearance of yellow fever in Memphis, quarantined against that city on Friday, the 18th day of July, 1879, and placed an embargo on the Memphis & Little Rock Railroad, permitting trains to run from Little Rock to Forest City, and then only under restrictions executed through a medical inspecting officer, who accompanied each train. Medical inspectors were, at the same time, stationed on the St. Louis, Iron Mountain & Southern Railroad—one on the Cairo division of this road, and one at St. Louis, Mo., to prevent any persons from traveling on these great thoroughfares who were from any infected district or place, unless they complied with general quarantine regulations. This board was acting under an act of the Legislature of the session of 1874, and which gave authority to any chartered or incorporated town to establish quarantine, but were restricted within a radius of five miles.

Under this act all the towns in any manner liable to infection organized local boards of health and inaugurated quarantine regulations. These local boards acted generally in concert with the control of the Little Rock Board. Occasionally everything did not harmonize, and local prejudices and jealousies now and then caused considerable disturbance and were somewhat difficult to appease.

About the first of August it became apparent that the finances of the city of Little Rock were nearly exhausted, and that she could not much longer bear the burden of expense attending so extensive a system of quarantine. Several expedients were attempted in order to raise means to continue the quarantine, but these efforts proved practically inadequate for the purpose. When matters had reached this crisis, the Governor, William R. Miller, issued his proclamation on the 5th day of August, calling the Board of Health, established by the State Medical Society, to assemble together in the city of Little Rock on the 9th day of August.

This Board made, through the Governor, application for pecuniary assistance to the National Board of Health, which was generously granted.

An executive committee, consisting of the President, Secretary, and R. G. Jennings, was elected, to whom was intrusted all business when the Board was not in session.

On the 15th day of August mounted patrolmen, to act as guards were stationed at Hopefield, along the river front, well instructed to

prevent all communication with the infected city of Memphis. These guards were under the control of a medical inspecting officer, appointed by the State Board of Health. The extent of river front guarded was some twenty-two miles, extending above and below the city of Memphis. The year previous there had been 108 cases of yellow fever in Hopefield, of which number 26 died. At the date of the establishment of the quarantine at this place, its sanitary condition was anything but good; besides, the houses where there had been cases of yellow fever and deaths the year before, had never been properly cleansed and disinfected.

The State Board immediately had the place put in a thoroughly healthy condition, and every house fully disinfected, and every precaution, deemed of any practical utility, taken to prevent the originating of yellow fever from causes, or germs, remaining from the year 1878, which were thought, should such arise, would, under favorable conditions, spring into activity, and perpetuate the continuance of the fever as it had been supposed to have done on the opposite side of the river. These efforts were eminently successful, as not a single case of the fever occurred in Hopefield. There was a case, first reported to the State Board as possessing suspicious symptoms, and afterwards, *i. e.* after death, as a genuine case of yellow fever. This party, named Webb, went from Forrest City, where existed considerable sickness, also reported as suspicious to the Board, to Hopefield, where he died on the 13th day of October. Upon the first telegram of this party having suspicious symptoms, the medical officer was instructed to isolate the case, prevent all ingress and egress from the building where he was sick, except the nurses, and, after his death, all bedding and everything in his room liable to contain infection, was ordered destroyed by burning, the house thoroughly disinfected, and no person permitted to occupy it until after the expiration of ten days. This prompt action prevented, we have every reason to believe, the recurrence of another case of the fever at Hopefield during this year.

The State Board of Health acted from the first as if the case was a genuine one of yellow fever; hence, if it had proved, as at first diagnosed, "a bad case of malarial fever," the extra precaution would have then served a very useful purpose, and, in neither event, produced unnecessary excitement among the people, but would rather have inspired confidence in their safety in seeing destroyed every apprehended source of danger. The first intimation that the State Board of Health received of any suspicious cases of fever at Forrest City was on the 8th day of October, when Dr. Cummings telegraphs: "There is some excitement here over the death of a lady and child. Think there are no grounds for it. Will write fully."

[Some details in regard to this case are here omitted, and the report proceeds as follows:]

"I can say this, that after the most careful investigation, I can find no possible chance of infection. The lady was an invalid for five months, and, with the exception of attending the funeral of a patient who died from a surgical operation, has not been out of her own yard for five months. The child that died was her infant, six weeks old.

From this date until the 13th, a period of five days, the Board of Health received no particular statement of any change at Forrest City. On the 13th, Dr. C. reports: "A fever of high type; irritated stomach; albumen in urine; disease has suspicious symptoms."

The Forrest City Board of Health met October 13th, and telegraphed the State Board of Health as follows:

"Resolved, that a malignant form of fever is now prevailing in Forrest City. of kindred type to yellow fever. Said disease has not assumed an epidemic form. We, therefore, advise all persons desiring to leave to do so at once.

"J. B. CUMMINGS, President of the Board of Health.

"LEROY HALBERT, Secretary."

The following instruction was telegraphed Dr. Cummings by the State Board of Health:

"Take every precaution to isolate all cases; allow no communication with the sick; will send you disinfectants on application; report frequently; have Board of Health to take charge of affairs."

[A stampede followed—out of a population of 1,200 or 1,300, not more than 60 or 70 remained. Yet, among this small number, notwithstanding every effort to counteract, the disease continued until the frost put an end.]

Dr. R. W. Mitchell, in his report of the yellow fever outbreak at Forrest City, published in the *National Board of Health Bulletin*, says: "Dr. Cummings, President of the Local Board of Health, informs me that the first recognized case of yellow fever occurred October 2nd. Most of the cases were among the best people of the town, living in houses completely isolated, and many of them new. Ten of the thirteen deaths were among ladies, nine of whom were married. Exposure in nursing the sick and attending funeral services accounts for the mortality among the ladies, who, on the latter occasions, are collected in a close room about the corpse, while the men generally remain outside. The first case probably occurred earlier than the date given, but correct information cannot be obtained, owing to the absence of those acquainted with the circumstances.

If the report of Dr. Mitchell is correct as to the date of the first case of yellow fever appearing in Forrest City, it is certainly very singular and strange that Dr. Cummings should have withheld this information from the State Board of Health, with whom he was daily and often hourly in communication. The Board is certainly unable to account for this omission on the part of Dr. Cummings, for not until the 13th of October did he in any of his communications have a doubt of the character of the disease prevailing, which he characterized as a "malignant form of malarial fever."

[Dr. Mitchell believes that the prevalence of fever among the ladies was attributed to the probability that dry goods were brought to them from Memphis—evading the blockade—and suggests that the National Board of Health should, by a commission, investigate this and other possible evasions of quarantine.]

If it be true, as Dr. Cummings says in his letter of October 8th, that "one thing is quite certain in my mind, that is, if it is yellow fever, it originated here," the question of quarantine is at once ended. The disease, we have every reason to believe, was genuine yellow fever; it has been officially so declared, and it is of the most vital

importance to the profession, the various boards of health, the furtherance of science and also of the great questions of this Association, viz., quarantine, that the origin of the fever at Forrest City be investigated and if possible made known.

Dr. Mitchell in his report does not mention this point; but says that correct information cannot be obtained, owing to the absence of those acquainted with the circumstances. Possibly at this time sufficient facts could be obtained, that would give a certain clue as to whether it was imported there from Memphis or originated as an indigenous product of that locality. If the yellow fever originated in Forrest City, the quarantine established in Arkansas, which has cost several thousand dollars, and been attended with immeasurable inconveniences to the people, placed an embargo upon commercial relations, restricted general business and social intercourse among the people, has proved of doubtful practical utility. If, on the other hand, it is demonstrated beyond question that the infection of yellow fever was smuggled into Forrest City from Memphis, then the quarantine is not so much to blame as those parties who have been guilty of the transaction, and the utility of quarantine as a factor in the preservation of the public health, is not invalidated or weakened one particle, but, on the contrary, measurably strengthened.

Individually, and until further enlightened upon this subject, I frankly confess that I entertain the opinion that the yellow fever outbreak at Forrest City is the result of imported infection, and not an indigenous product of that locality; for, if the latter, why has not yellow fever prevailed in that place in years past? If, therefore, the yellow fever at Forrest City results from a secret violation of the quarantine established by the State Board of Health, it practically demonstrates the necessity of a more rigid quarantine, and that we could have expected successful results would have attended quarantine in Arkansas had not the same been violated.

Forrest City is the only point where yellow fever has prevailed in the State during the year 1879.

It is true a yellow fever outbreak occurred in Concordia, Miss., opposite the eastern boundary of Arkansas, where it prevailed to a considerable extent.

The State Board of Health, immediately upon its hearing this fact, stationed mounted patrolman or guards on the Arkansas side of the Mississippi river, opposite, at points deemed advisable, to prevent intercourse from that infected locality, and not a single suspicious case occurred in this section upon the western side of the Mississippi river. Hence no other inference can be drawn but that a thorough system of quarantine, rigidly enforced, guarantees a certain degree of protection, if not exemption, of the people from the visitation of yellow fever proportionate to the vigilance of the officers and guards who are charged with the enforcement of its regulations.

MAY NOT YELLOW FEVER ORIGINATE IN THE UNITED STATES?

By A. A. Woodhull, M.D., U. S. Army.

[In the absence of the author, was read in part by Dr. Ezra M. Hunt, Secretary of State Board of Health of New Jersey, as follows:]

Dr. Woodhull claims that the epidemic of '76 did unquestionably originate in Savannah, and was not traceable to importation. His paper was very elaborate, and embraces so many ascertained facts bearing on the subject, that no satisfactory statement of its contents can be given in the limited space permitted. A mere outline will serve to indicate the general course of his argument and its leading points.

The first publicly recognized case occurred on the 12th of August, but it was afterward proven that the first case occurred on the 23d of July. Between that date and the 20th of August, the fever appeared at five other distinct and widely separated points. Five separate outbreaks occurred, and from each of these points the disease radiated in all directions, until the boundaries intermingled, and the fever prevailed everywhere.

Dr. Woodhull spent four months in making minute investigations into the history of each one of these earliest cases, in each instance found that there was not only a failure to connect them with any vessel, cargo or baggage from any infected port, but there was in each instance a local cause which would explain the occurrence of the seizure. So clearly did this appear that the Doctor was compelled to abandon his pre-conceived ideas upon the subject and accept the conclusion that the disease originated independently of any foreign intercourse.

Five vessels—one British and four Spanish, arrived from possibly infected ports a short time previous to this outbreak; they remained from five to twenty days at the wharves, and left without any cases of fever occurring among their crews. Owing to the prevailing malarial condition of the shores of the river their crews slept in the city, carrying their bedding from the vessels to their boarding-house —all this without any cases of fever occurring, either among their number, or in any of the houses were they were lodged. The first case which occurred was that of a sailor attached to a coasting schooner for thirteen months preceding, during all of which time the vessel had not left the United States. The crews of the vessels which came from Cuban ports were all exempt from fever from first to last.

A remarkable case was that of a parish priest, which occurred on the 13th of August. At that time there were but two foci of the disease in the city. In this case not the faintest clue could be traced to any outward infection. The manifest cause was to be found upon the spot. A few yards distant from the priest's sleeping apartment, under the same roof, was located a water-closet and bathroom, an interior apartment having no ventilation except by the door and by windows communicating with adjoining rooms. It was supposed that there was connection with a sewer, but examination proved that the soil and waste-water pipe emptied into an old well in the back yard of the house.

At the time the premises were examined, March, 1877, the odor of a foul closet was very perceptible, and it was stated that the air of the house was never free from the taint. Another case was that of a child who had been in the habit of playing along the bank of the Bilbo canal, and swimming his dog in the water of the canal and of a drain leading into it, both of which were in a filthy condition from

the drainings of water-closets, surface privies and similar sources. In all the other cases, minutely described, similar conditions, accounting for the sickness, could be traced.

Having given examples of foci, distinct and independent from which the disease radiated, he said all these primary cases had a common exposure. He gave examples, also, in which cases occurred, which indicated no connection with pre-existing disease. There had been cases in Savannah. Comparatively isolated cases from other cases arose after ten days' or more interval, and there was nothing known of the nature of the disease as occurring in Savannah which was contrary to its long observed and well recognized laws. He did not deem importation necessary for the production of the fever, because innoculation was not proved. No one denies the propagation of yellow fever from pre-existing causes under favorable circumstances. Spontaneous generation was held out as the only alternative belief for those who respect the necessity for the uninterrupted connection of every case with preceding cases.

Specific germs may be floating in the air of ill-kept and crowded wards awaiting a favorable receptacle. It is reasonable to believe when the germs are once diffused they generally retain their characteristic affinities. Frost puts an end to the propagating power of the fever.

The degree of cold that will extinguish an epidemic does not devitalize the fever cause.

The germs may survive indefinitely under favorable conditions of fertilization. The fever cause might arise from an infinite variety of self-propagating germs, which may gradually yield to adjacent influences, as in vegetation and animal life. The fever course might be compounded of first emanations from decomposed organic matter under meteorological and other conditions not yet clearly comprehended, and possibly intensified by a passage through the human body. Yellow fever occupied a middle position between the ordinary malarial and the true specific disease. It resembled the former in that it only spread under certain favorable climatic conditions. In Savannah much of the city was prepared like the Happy Hollow vicinity of Memphis in '73—a very nursery for the ravages of the disease. At Memphis the disease spread from direct importation. No importation is proved to have been the case at Savannah. Distinct outbreaks he thought impossible from single importation. In all regions where the disease has raged fiercest it has been found the pollution of the soil by human excreta was most marked. He did not, by any means, intend to be construed as depreciating the importance of a judicious and efficient quarantine. New York had through quarantine but one avenue to watch to exclude the epidemic, but at the South one break in the long cordon from the Chesapeake to the Rio Grande may allow the disease foothold, and then land, as well as sea, must be guarded. Quarantine was useful. Cleanliness was a vital consideration, especially in the lower latitudes.

Dr. T. J. Tyner read a brief paper on

THE ETIOLOGY OF YELLOW FEVER IN MEMPHIS.

He holds that the yellow fever in Memphis and other American cities originated *de novo*; or admitting that it is exotic, he believed

its spread to be absolutely dependent upon some local condition. In regard to quarantine, Dr. Tyner said he believed it could be enforced only by martial law.

Dr. Early, of Kentucky, regarded the paper of Dr. Woodhull as the keynote of future developments. The case of the sailor bore him out in an opinion he had entertained for years. Every malarial region in the country was a sleeping volcano to the people residing there. He believed that the yellow fever germ depended upon climatic influences, and that once in existence it might be kept a thousand years and not killed. Frost did not kill the germ, only killed that one development of it, and the germ lived to await new influences, which were to warm it to life again. Under proper conditions and restrictions, however, the yellow fever need never appear in this country again.

Dr. Hargis, of Pensacola, held that the yellow fever was not exotic. The primitive origin and its habit and history should be settled.

The first epidemic of yellow fever that ever occurred in Europe was upon the return of Columbus to Barcelona.

The early history of the fever was given, including all the early outbreaks, and the fact shown that all originated from local causes, and were not the results of importations. The ships introducing it invariably sailing from ports where the fever was unknown. It then became domesticated in the West Indies. There was no doubt of the nautical origin of yellow fever. Many theories have been advanced, but none of them were tenable, for the fever was not indigenous to this country, nor on land in any country. It was a creature of the sea. Filth could not cause it any more than it could cause measles.

Dr. J. W. Singleton of Kentucky, read, in part, a paper on YELLOW FEVER, by Dr. —— Stilwell, the purport of which was that the disease was of great antiquity. The time appropriated for reading this paper expired before any practical points had been reached.

Dr. Campbell, of Augusta, remarked that the last paper read, had launched him into such a sea of erudition that he was unequal to any remarks upon it; he would, therefore, confine himself to his own ideas. He did not believe in the filth production of fever; he did not think it was indigenous to the country. The germs were either imported shortly before fever appeared or a year or more before. These were laid away, and in time produced a crop of fever. Filth, if piled up to the second-story windows, could not produce fever unless the seeds of the disease were there.

Dr. Julius Wise, of Memphis, said he would not assume that fever was indigenous, for it seemed to be the unpopular side, but it would be well to look at the facts. In 1878 the importation theory was accepted, but facts pointed out that there were cases of malarial fever, etc., before the claimed importation cases, which afterwards proved to be yellow fever. He knew there were cases in 1879 before Mulbrandon's case. There was fever in May, June, and February. There was yellow fever in Memphis all last winter. At Concordia the the only goods that had been received from Memphis was a sack of coffee. Those who handled the coffee escaped while those who did not were taken with yellow fever. This was curious. Early cases in Memphis were not noted, while malignant malarial fever, etc., were common. If no epidemic had occurred, no one might ever have known

that there had been fever in Memphis this year. In small towns frequently, there were malignant fevers. He questioned if these were not yellow fever.

Dr. J. M. Keller asked whether the ballast used in the ship from which the first case originated in Savannah, in 1876, was not taken from an island where yellow fever was indigenous. This was as good a vehicle for the fever germ as could be wanted.

Then, the yellow fever could and did jump from one place to another, as proved by the history of the first case in Memphis last year.

Dr. Elliott, of Savannah, said that all the possible testimony was taken in the Savannah epidemic, and it did not carry out the ideas advanced by Dr. Woodhull in his paper.

Dr. Sternberg, United States Army, said that the ballast came from an island near Havana.

Dr. E. M. Hunt said that the point was plainly made in the paper that the ballast taken could not be infected with fever. The paper also showed that the writer believed that the fever resulted more from filth than from malaria.

Dr. Holliday, of New Orleans, said facts could be garbled, and, in a few minutes, made to prove any theory that might strike the fancy. New Orleans had been made to bear the blame of every case of fever in this country, and undeservedly. No one could claim that the fever in Memphis this year was imported.

Dr. Austin, of New Orleans, said he had never missed an epidemic in New Orleans for forty years. He believed the fever was exotic. The ballast referred to in Dr. Woodhull's paper came from an infected island. The sporadic cases in New Orleans were stamped out this year. Filth could not produce fever, but he believed that filth could spread it. It was a great thing to cure yellow fever, but it was a greater one to prevent it from occurring.

Dr. Howard, of Baltimore, thought there were far too few facts given, and given too carelessly. The great question was, how to prevent the fever, the one on which they wanted the most information, and on which they had received least.

Dr. A. N. Bell, of New York, stated that the relations of yellow fever to filth were more common and more persistent in connection with ships than under any other circumstances whatever. For example, a ship may have been engaged in running from Havana to New York this year and become filthy, and next year have her first outbreak of fever on approaching New Orleans or other climate congenial to the disease ; or even after two or three years, if not, indeed, perpetually, at convenient seasons, whenever supplied with fresh subjects, so long as she is permitted to house in and transport infected filth. The only remedy for such conditions is the thorough inspection and cleansing of all vessels at the port of departure before cargo is allowed on board. This criminally common filthy condition of ships, Dr. Bell thought, fully accounts for the mid-ocean outbreaks, and the so-called nautical origin of the disease, by some recent writers.

ISOLATION IN YELLOW FEVER.

Dr. J. P. Dake, of Nashville, said :

In the very able report from New Orleans are a few points regarding which I desire very briefly to speak.

1. As to the character and value of measures to prevent the introduction of yellow fever from without, the committee very wisely favors a rational quarantine.

To my mind, in view of the evils of the shot-gun quarantine, and of a quarantine instituted and maintained against vessels, cars, persons, and merchandise, not at all infected, the use of the term rational is highly proper.

A rational quarantine is that providing against no comers or carriers, except such as we may have good reason to suspect of harboring or holding the seeds of the disease we wish to avoid.

2. The next point I desire to notice is the method of providing against the spread of the disease from its first case or earliest apparent focus.

If the theory of Dr. Bailey, of Louisville, who spoke here last night, be true, namely, that the yellow fever comes not by importation, is not transmissible from point to point, but occurs like chills and fever, from an atmospheric condition strictly local, then there is no need of inquiry or action as to the protection of a community against infection from a first case.

But facts are against his theory, if never before, certainly during the past two summers in West Tennessee.

It is necessary to understand and to be ready to *execute* the best possible method of isolating the first case from surrounding population.

Soon after the disappearance of the epidemic of last year, I was in the city of Vicksburg endeavoring to learn something of the character and habits of the disease, and, while on top of the court-house, viewing the field of the epidemic, an old citizen, pointing to the jail below us, with its brick wall and but one door, or entrance, remarked that, notwithstanding the fever had been in nearly every house around that institution, *not one case had occurred among its inmates.* I was told the number of inmates, but cannot now recollect it.

Soon after, while in the city of Memphis, being shown over the track pursued by the epidemic there, I was told that for some weeks after the appearance of the fever, and while cases were in the immediate neighborhood of the jail, not a case occurred among the inmates of that institution, till at last a culprit was admitted, having the fever at the time of his admission.

These, Mr. President and gentlemen, are significant facts. They teach most unmistakably *the value of isolation.*

In those institutions there was but little intercourse with the outer world. The doors were opened very seldom, except for the entrance of officials and the bringing in of provisions for the inmates.

The same atmosphere furnished vital air, the same sun supplied heat, the same vicissitudes of weather appeared and the same kind of water was used in the jails as in the city outside, and yet not a single symptom of the disease appeared. No one had yellow fever within, while outside hundreds were having it within a stone's throw.

I have some recollections of a statement that once, toward the beginning of the present century, when the yellow fever had been brought to the port of New York by shipping, and it had begun its march from the Point, as in times past when it ravaged that city, the

authorities constructed a high, close, board fence, extending from river to river, as a barrier, or, in more polite parlance, a *cordon sanitaire*, and that the disease, extending up to it, never passed beyond.

And it is said that, also, in the years long past, the yellow fever was brought to the city of Providence by shipping from the West Indies, and, having gained a foothold near the water, the local authorities constructed a high, close, board fence around the square in which the cases were located, preventing ingress and egress except with great care, and that not a single case occurred outside the extemporized *cordon sanitaire*.

In regard to these instances of isolation in New York and Providence, there may be gentlemen present much better informed than myself.

I may be mistaken as to the facts, and shall be pleased with any corrections made.

Last night, when I asked Dr. Thornton, of Memphis, what steps the local authorities had taken there to prevent the spread of the fever from its earliest *foci*, I desired the information for myself and for this Association, as to the *efficacy of isolation*.

It appeared to me, as I presume it did to others reading daily reports from our sister city, that adequate efforts at isolation and arrest of the disease were not made before the adoption of the measure or announcement of the necessity of *depopulation*.

Certainly, no right feeling person, away from the scenes of death and dismay in the city of Memphis, is going to say one word by way of censorious reflection upon those brave men who stood at their posts and fought for their people when so many fled, as well able to stay as themselves; but, in the interest of sanitary science and for the good of Memphis and other places and peoples in the future, it is proper for us to inquire if all was done that should have been; and if there be any good in a more thorough isolation than was practiced there.

I have been told by a well-informed and public-spirited citizen of Memphis that, during the illness of Judge Ray, one of the earliest cases of fever this year, dozens of people, friends of the invalid, went daily to inquire after his condition; that he saw them often in the street cars returning from such visits, even after it was well known that he had yellow fever.

I trust, before this discussion is closed, we may hear from gentlemen who have had experience in measures of individual or local isolation.

If quarantine is important, this is no less so. The former could not possibly have saved Memphis from the epidemic this year, while the latter might possibly have done so.

THE YELLOW FEVER QUARANTINE OF THE FUTURE.

By HENRY FRAZER CAMPBELL, M.D., of Augusta, Ga., of which the following is a synopsis:

"What shall be our quarantine?" The present quarantine system is impracticable; too cruel for humanity to tolerate. It stupifies the honest convictions of a majority of the profession. Yellow fever is *not* contagious; *i. e.*, not communicable from individual to individual

—and, though the theory of personal contagion is not generally believed in by the profession, yet the same old laws remain on the statute books.

A quarantine of vessels, and also of railroad trains, should be strictly enforced during the prevalence of yellow fever. Never let a single car, that is freighted from or takes passengers in an infected port, come to a healthy town. Let them be met at least twenty miles from the city by fresh cars, both for the passengers and the freight. Keep out all baggage, trunks and clothing, but let the individual come in, *even if the fever is on him.* Do not say to the refugee, fleeing from the dread pestilence, Go back, with your wife and children, to the infected region, and breathe again the foul air laden with the seeds of death. Let the individual be thoroughly disinfected; change his clothing at quarantine ground; even wash his head with carbolic acid if thought necessary, but let him find refuge in a place of safety. The germs in the body of the man himself are incapable of propagation.

The yellow fever subject is laboring under the dire effects of a poison, but centuries of experience have demonstrated that he can no more communicate his disease by emanations from his own body or secretions, than can the subject poisoned with strychnine communicate his frightful tetanus to his friend or his nurse; as the strychnine itself is required to produce another case, so, in yellow fever, fresh supply of atmospheric disease germs is required to produce the phenomena.

Dr. Campbell said that though at first he disliked the idea of a national or "central" quarantine, yet in the present state of things it seemed to be imperatively demanded. Some of the State Legislatures are controlled by men who actually snarl at the idea of appropriating a mere pittance to the work of sanitation. They refuse to give over $1,500 to meet the expenses of the board and to publish its reports, though they are at the same time lamenting the national quarantine and decrying it as a political measure. This alone would make it necessary that Congress should take charge of the matter.

The earliest epidemics of yellow fever occurred at Northern ports, New York, Philadelphia, Boston, etc; *afterward* in Savannah, Charleston, etc., and again, after railroad communication became general, in interior towns. At present the fever does not ravage the Northern cities, though it continues its deadly work in those of the South. Why? Because at the South there has not been the knowledge and foresight to keep it out by appropriate legislation and the enforcement of a proper quarantine.

In reference to the preservation of the disease germs in closed rooms, etc., Dr. C. gave it as his belief that such germs do "lie over," but do not retain all of their potency. Yellow fever is an exotic. It finds a soil here where it can produce a fine crop. But the germs then "go to seed," and if not killed by intense cold, but preserved in closed rooms, closets, trunks, etc., may again give rise to a second, but milder epidemic. In the third year the seeds run out; they are virtually killed, having neither potency to again produce disease, nor any reproductive power.

At the conclusion of Dr. Campbell's paper, the President announced that ten members of the association had signified a desire to

take part in the discussion on it and the previous papers on the same general subject.

A motion was adopted that each member be allowed ten minutes, and that no extension of time be granted.

Dr. Holliday, of New Orleans, began by defining the position which the physicians of New Orleans now occupy as a solid phalanx upon the question of quarantine. They are, he said, very nearly of one opinion in regard to it. All believe that quarantine is demanded. All believe that the provisions of a judicious quarantine are calculated to meet the danger of the fever being brought into the city from infected places. Opinions differ on the question whether yellow fever can appear again in the future without a fresh importation. Dr. H. himself believed that the disease has now become *en*demic, and, under favorable conditions, will be reproduced, even if there should be no fresh importations. Still he is willing that there shall be a quarantine, but demands that it should be a quarantine directed by intelligent reason. If a vessel known to come from an infected port arrives, let men of experience and intelligence determine what preventative measures are necessary in each case, and have power to enforce such orders as they deem requisite.

It is agreed that yellow fever may be carried from place to place—but *how* is it carried? *Not* by persons, but by goods, clothing, cotton, and other things of a porous or absorbent nature. He agrees fully with Dr. Campbell as to the uselessness of personal quarantine, but the trouble is that passengers *will* carry with them baggage and personal effects. If a reasonable quarantine shall be established, the time will soon come when the existing oposition will almost entirely cease, and its inconveniences will be so diminished as to be no longer a serious objection.

Dr. J. P. Dake, of Nashville, said he had sent his name to the President merely that he might ask what steps had been taken to prevent the spread of the disease before the citizens were advised to leave Memphis. He would allow Dr. Thornton, President of the Board of Health of that city, part of his time to answer that question.

Dr. Thornton replied that it was not the intention of the Board of Health to let the fact be known that there had been a case of fever, but to publish it in the mortuary report. There was such alarm, however, that a card was published giving the facts in the case. Clothing, bedding, etc., of patients was burned. They had no means at command to compel depopulation or isolation. Disinfection was resorted to in a mild degree.

Dr. J. H. Rauch, of Illinois, said that in 1873 yellow fever was brought to Cairo, Illinois, in cotton, and was carried to Centralia, one hundred miles in the interior. He read the following letter addressed to him as evidence of this statement:

NASHVILLE, Nov. 19, 1879.—Dr. J. H. Rauch, Dear Sir. In 1873 my brother was clerk on the Illinois Central wharf boat at Cairo. We were handling quite an amount of cotton, that reached us principally from Shreveport, La., and Memphis, Tenn., by river. He was in direct contact with the cotton, as well as two or three other clerks, who all sickened and died with what we subsequently pronounced yellow fever. Thereupon an order was issued prohibiting us from

receiving cotton, particularly from Shreveport. My recollection is that there were 18 deaths in all that it was claimed were traceable to the same cause in Cairo in that year. Yours truly,

JAS. JOHNSON,
General Southern Agent, Illinois Central Railroad.

Dr. Pinckney Thomson asked if Dr. Rauch was certain the cotton had brought the infection to Cairo.

Dr. Rauch said he was. It was so stated in the Surgeon-General's report. He did not know it of his own knowledge, but what he had been told.

Dr. Thornton said he did not think Dr. Rauch had sufficient evidence to prove that the contagion resulted from the handling of cotton.

Dr. A. N. Bell, of New York, remarked that he would begin what he had to say on this subject by offering the following resolution for the consideration of the Executive Committee:

Resolved, As the sense of the American Public Health Association, that we have with eminent satisfaction heard the determination of the people of Memphis to institute such means for practical sanitation as may be deemed to be essential for the redemption of that city from yellow fever, and that we will, individually and collectively, exert ourselves in the promotion of the work.

Dr. Bell said that he had listened with great interest to the papers read, and their sentiments. He sympathized deeply with the condition of Memphis, but he felt constrained to say, from his own observation, that he had never seen a city in such an abominable unsanitary condition as Memphis. Its condition was revolting, and the people of that city were deeply afflicted. In the epidemic of 1878, 20,000 people had fled from the city. Of 19,600 that remained, 17,600 had had yellow fever, and 5,150 had filled untimely graves. Of the 19,600 who remained in the city, only 6,000 of them were white people, and of these, the enormous proportion of 4,204 died. 14,000 were colored people, and of these 946 died. He believed there was not one who was left in the city who had not divided his money and his lot with the sick and dying. At such a time there was no opportunity for the removal or even notice of the accumulating filth of the city. He did not charge the filthy condition on the people of Memphis. At the beginning of the epidemic last year, it was probably in no worse condition than several other cities he knew of, which he feared would encounter the same fate, ere the people would be aroused to a sense of self-preservation. Memphis had been sick unto death. One-sixth of the population, in two summers, were dead and buried, and those who survived were impoverished. He asked if it was a time to hold them up to public censure. And he inquired if there was a people in the world who would not have acted as the Memphis people have acted, in making it their first duty, to nurse the sick and bury the dead. The long roll of the names of the Memphis dead, stricken by this fatal pestilence, said to this Association, in unmistaken language: "Here is a foeman worthy of your steel." The interests of commerce and of humanity demanded that they should redeem Memphis. Its true condition, he thought, could not possibly be exaggerated; the ordinary means of disinfection was no disinfection at all. But he

earnestly appealed to the Association to make the cause of Memphis its own cause, and the redemption of Memphis its individual and united work.

Dr. A. B. Waterfield, of Mackenzie, said he agreed fully with Dr. Campbell. In no instance, out of 2,000 cases in Memphis, did one contract the disease from personal contact with the sick, but in every instance the infection was carried in things—baggage, personal effects or freights. In regard to whether cotton is a material peculiarly fitted to convey infection, he was not fully satisfied, but if yellow fever was introduced into Covington, Tenn., in which it unquestionably was, surely a material as porus as cotton was even more likely to carry infection.

To illustrate, he specified the following cases which occurred in Covington under his immediate observation :

A German Jew sickened and died in a room in which nine persons ate and slept, yet no one else took the disease.

A negro from Memphis was taken with the fever in a crowded room amid filthy surroundings, yet no one else of the number who occupied the room with him had the fever. A lady from Memphis opened her trunk of clothing, and five days after took the fever. Her two children lived and slept with her, yet were not attacked. The Postmaster received at one time abut ten bushels of delayed mail matter from Memphis, and attempted to disinfect it himself. Soon after he was taken with the fever and died, but no one of those most intimately associated with him had the disease. The instances he regards as conclusive as to the question of personal contagion.

Dr. Elisha Harris, of New York, said that the public generally would accept any clearly enunciated plan that was urged by the medical profession. The latter differed as to their ideas, but they had a common thought—to prevent disease. He thought they should make concessions on points they did not fully agree on, and agree on those common ideas they had as to the proper plan to be pursued. Before leaving New York, a member of the New York Chamber of Commerce approached him and requested him to present to the American Public Health Association a code of international rules for the quarantine of such diseases as the yellow fever, scarlet fever, etc. The medical profession were agreed that yellow fever did not originate in Memphis *de novo* in the first epidemic, and that it had appeared and disappeared and appeared again in New Orleans.

Dr. S. A. Hargis, of Pensacola, presented the following as his ideas of quarantine and preventive measures:

1. Naval hygiene.
2. A modification of naval architecture, so as to admit of free ventilation as much higher as possible, and afford facilities for the removal of bilge water, and keeping those spaces beneath the decks free from accumulation of *debris* of a cargo and dead organic matter.
3. Municipal sanitation.
4. Quarantine.
5. Disinfection.

That yellow fever is absolutely contagious, but under some circumstances does not communicate.

Judge J. W. Clapp, of Memphis, said that he thought they should all be humiliated at the fact that, after two or three days' discussion, this body of physicians and sanitarians was no nearer a conclusion than at first. This pestilence had been ravaging the South for four hundred and fifty years, yet nothing could be found to stay its fell work. He represented in part the people of Memphis. He did not want it to be thought that the people of that city were worse than all others; they were not lepers, living in filth, and going through the cities of the country hat in hand as mendicants; Memphis was no filthier, no worse, than plenty of other cities, in sanitary matters. There was the little town of Hot Springs, that, without any filth, had been decimated with the fever in times past. Gentlemen had spoken very wisely and very strongly about Memphis with its filth and rottenness, and foul condition, but they did not particularize. Memphis wanted aid; she wanted to avoid the recurrence of the plague, and he called upon this body to say what was to be done. Let the State Board of Health, the National Board, all sanitarians, say what Memphis must do, and they would put their shoulders to the wheel. When they knew what was best for them to do, they would, in God's name, try to do it.

Dr. Bailey said Dr. Wise had begun his remarks with the statement that he was unwilling to take the newspaper side of a question. Unlike him, he would, as far as he could, speak his own convictions, and he believed it should be the rule of action with the rest of those interested in the cause. Quarantine, he said, was repugnant to him. He did not believe that yellow fever was contagious, since it was not ubiquitous. The general principle of contagion was that it was limited by opportunity. Contagious disease prevailed wherever men go. He cited instances to prove his argument—instances which he said had come under his own observation. If it was true that the fever was not communicable, then teach the people to be fearless of it. He believed there was no casual relation between cases. As to germs, he did not believe in them. It was true he did not know them, still he had no reason to credit their existence. People seemed to be unwilling to acknowledge indigenous disease, as if it were something degrading. People seemed to be ashamed of "de novo cases." An ounce of sanitation was worth a pound of shot-gun quarantine. He commended the style of sanitary work that had been done in New Orleans. He would emphasize the idea of attending to thorough sanitation.

Dr. Taney, of New Orleans, asserted that from the earliest times to the present day there had been no progress made in positive knowledge. He denied that there had ever been anything settled in regard to yellow fever, and this because every one goes his own way, and all are alike and equally in the dark. If we are ever to accomplish anything, there must be united effort in the matter, and to secure this, the general Government should take the chief direction and control in the matter. We should all combine our efforts to sustain the Government in this work, and contribute towards the carrying out of its investigations and its regulations. Individual efforts in diverse directions amount to nothing.

Dr. E. M. Hunt, of New Jersey, said he desired to ask Dr. Bailey the following questions:

1st. Are not the things upon, or in the vicinity of, persons who have had the yellow fever, more dangerous than articles in the same town?

2d. If so, has not the *person* a relation to the surcharging of articles called fomitic?

3d. Can a person's clothing become fomitic through a person having yellow fever, and yet dirt in his skin, his hair, whiskers, etc., be warranted as having no fomitic capacity?

Dr. Bailey said that the disease was climatic, not contagious, therefore the climate must be conveyed in order to convey the disease.

Dr. Peters, of New York, said that the conveyance of the disease was more like typhoid fever than anything else. The typhoid fever could be treated in a hospital without conveying it to any other person, but let the discharges get into the drains and they become infective in a few days from decomposition. So in yellow fever. There must be something from the person. The poison being hidden away, fomenting, become the seeds of a great epidemic. This was middle ground between the extremists on either hand. In 1878 the fever was carried into many towns. In some it spread, in others it did not. Though New York did not now have the fever, it had had some close risks. The foot of Rector street was historical in relation to yellow fever. The history of several epidemics in New York was referred to as proving the positions taken. New York, up to 1822, was again and again afflicted with yellow fever. Health officers and physicians died, and importation was shown in nearly every case; but there was always filth ready to receive and diffuse it.

Dr. Elisha Harris, of New York, speaking of the yellow fever epidemic of 1822 in New York, said it was true, fence barriers had been erected for the purpose of staying the pestilence. It had been found necessary to move the fence every day, the advance of the fever being about fifty feet a day. He thought that if any future epidemic should break out in New York or Brooklyn this same system of erecting barriers would prevail.

Dr. Peters said he well knew the particulars of the fever in New York in 1822, and the barriers erected. The boarding did help stop the fever, but when the fever poison reached the mass of pure air in that part of New York near Chambers street, then very thinly settled, the poison was then diffused in this pure atmosphere and died out. This was a more formidable barrier than the board fences.

THE NATIONAL BOARD OF HEALTH.

Dr. Folsom said he had been directed by the Advisory Committee to offer the following preamble and resolutions:

Whereas, the National Board of Health has, in accordance with the law which created it, requested the advice of the American Public Health Association regarding the form of a permanent national health organization of the United States, including its relations to quarantine, both maritime and inland, and,

Whereas, the opinions of the Advisory Council of the Association, upon the subject of health legislation, collected and presented to this body through Dr. J. M. Toner, Chairman of the council, have been duly considered; therefore,

Resolved, That, in the opinion of the American Public Health Association, the present National Board of Health has been of such vast service to the country that it is not expedient to make any essential change in its organization, and that any minor improvement in details should be left to the Board itself.

2. That the investigations which have been commenced by the Board are approved and should be continued, and that similar investigations should be undertaken by it into the consideration and prevention of other diseases as well as yellow fever.

3. That Congress should appropriate sufficient funds to enable the Board to employ the best talent and apparatus in such scientific and practical inquiries.

4. That the operation of the existing quarantine law, and of the rules and regulations prepared by the National Board of Health on that subject, have accomplished great good, and that no change in the law should be made without the most careful and serious consideration.

5. That in the opinion of this Association, the national quarantine should be under the direction of the National Board of Health and of an executive committee, to be selected by that body.

6. That this Association has no suggestions to make with reference to any amendments to existing legislation in regard to quarantine, preferring that they should come from the National Board of Health, as the most competent body to advise whatever may be best.

7. That it is expedient for the National Board of Health to call an international congress for the discussion of the very important subjects of international sanitary quarantine, etc.

8. That it is the duty of the General Goverment to build, equip and conduct, at the mouth of the Mississippi river, a quarantine station at such a place as may be designated by the National Board of Health.

9. That the Secretary of this Association be instructed to forward to the National Board of Health a certified copy of these resolutions, together with the reports and documents of the Advisory Council, and that the executive committee be instructed to take such action, during the next session of Congress, as may seem best suited to promote legislation in accordance with these resolutions.

Dr. Folsom also read the following resolutions, but said that, as the points contained in them were included in those of the Advisory Committee, they were not recommended for adoption:

By Judge J. W. Clapp, of Memphis: *Whereas*, The appearance of yellow fever as an epidemic in Memphis Tenn., during the last two summers has created an apprehension that the ill-fated city may continue to be visited by this scourge, the effects of which extend far beyond the infected locality and assume national importance, not only as regards the public health and safety, but as affecting our inter-State commercial relations; therefore,

Resolved, That this Association recognizes the fact that the sweeping epidemics which have occured in Memphis during the past two summers have been of such a character that they are no longer local in their bearings, but *national;* therefore it is respectfully urged upon Congress the early consideration of measures looking to the prevention of similar epidemics at that point.

By Dr. Gibbs, U. S. Navy; Be it resolved by the American Public Health Association, that it shall be the duty of the National Board of Health to designate, for the information of the President of the United States, such foreign ports as shall, by said Board, be deemed infected in the sense that all vessels, arriving from the same into the seaports of the United States, shall be subject to quarantine laws. The previous sanitary history of said foreign ports, based upon consular and other information, shall be considered by the National Board of Health in designating such infected ports or localities.

Be it further resolved, that it shall be the duty of the President of the United States, upon being so advised by the National Board of Health, to cause a general proclamation to issue in which a list of such ports and localities shall be declared infected in their commercial relations with the seaports of the United States for a period of six months, viz.: from the first day of May until the first day of November.

YELLOW FEVER IN NEW ORLEANS IN 1879.

Dr. D. S. Herrick. gave a statement of the cases of fever which occurred in New Orleans in the summer of 1879. The cases were only 41 in all, to which number should probably be added seven cases which occured earlier, begining June 16th, and between that time and July 3d, so mild in type as not to be recognized as yellow fever until they were found to be connected with cases occurring later. A case occurred as early as the 26th of March, on the steamer Baltimore. This case was treated at the quarantine hospital, and had no possible connection with the subsequent fever in the city.

At the outbreak of the fever at Mississippi City the first case was that of a servant girl, who had been employed in the Stout family, where occurred a number of the cases above-mentioned. Four or five other cases followed this in quick succession.

The next case occurred on the 22d of July, followed by a fatal case on the 24th. Eight or ten cases followed, all in the neighborhood of the residence of the Stout family. At this time there was a cessation until the 10th of August, when a case occurred in the Fourth district, a point nearly two miles distant. This was a young man who had been employed in the work of disinfection in the infected district. Several cases occurred in the next 12 days, all in the same Fourth district. There seemed to be then but two foci of disease. Two or three other cases occurred at points in the rear of the Fourth district, but these were clearly traceable to exposure in the same region. A case also occurred in the rear of the First district, which resulted fatally, and which was not traceable to any known cause.

ENFORCEMENT OF QUARANTINE.

Dr. Samuel H. Choppin, of New Orleans, discussing the report of the committee of the New Orleans Medical and Surgical Association, said no quarantine could be effective, on account of the laxity in the execution of laws, and the opposition of commercial interests. The yellow fever was thus carried to New Orleans, and it was thus carried to Memphis.

Dr. Lloyd Howard, of Baltimore, referring to the difficulty of enforcing quarantine, said there were so many ways of spreading the

infection that this difficulty could be easily accounted for. He mentioned sleeping-cars as an instance of this.

THE PROBLEMS OF YELLOW FEVER.

Dr. Jerome Cochrane, of Mobile, said that as it was manifestly impossible, in the brief space of time allowed, to go over the whole ground under discussion, or to advance any proofs in support of his views, he would attempt no argument, but simply give, in a few words, a brief statement of his own personal convictions. He was surprised at the expression of some opinions he had heard in the meeting. He himself believed that there were some things which were certainly known. Among these were the facts:

1. That yellow fever was the product of a specific poison. 2. That this poison was something introduced into the person of the patient. 3. That it was material. 4. That it could be carried from place to place, and give rise to outbreaks of fever where it had not previously existed.

Among the unsolved problems were the attempt to demonstrate the nature or character of this poison; whether it was mere physical or living poison; also the question whether the poison multiplies *in* the bodies of the sick, or outside of and away from their bodies. These he regarded as unsolved problems, but by no means hopeless of solution.

The doctrine of hybernation of the fever germs—whether they preserved their power from one year to the next, or any subsequent year—was a thing neither proven nor disproven. He did not believe it possible to have a quarantine which should be effective, and at the same time produce no material inconvenience to the community.

CONFLICTING THEORIES OF QUARANTINE.

Dr. Billings remarked, that to depend solely on quarantine or municipal sanitation would be unsatisfactory. They had yet agreed on nothing, and it behoved them, in the few hours that remained, to agree on some plan as representing their ideas on quarantine.

Hon. S. C. Cobb, of Pensacola, said that, as a business man, he desired to know what practical thing it is proposed to do in this matter of quarantine. If we wait until an agreement between the conflicting theories of the doctors, nothing will be done. How will you prevent the importation of yellow fever? He would answer, by an effective, and *intelligent* quarantine.

The National Board of Health cannot enforce their regulations at the ports from whence infected vessels come; the danger must be met and combated at our own doors. Detention of vessels at quarantine varies from 4 to 40 days in different parts of the country. How much time is necessary? What we want is to hold them long enough to effect the object of purification, but not an hour longer.

During the last summer, 22 ships arrived at Pensacola, from Rio, three of them having cases of fever on board. The Board of Health found it sufficient to discharge cargo and ballast, thoroughly disinfect and fumigate, and then permit the vessels to load and depart; but of 92 vessels arriving from West Indian and South American ports, none

were detained more than 24 hours. No fever has prevailed in Pensacola this year, nor in any year in which these precautions were observed.

In their intercourse with New Orleans, restrictions were made as light as possible. Groceries and metals and similar articles, were admitted without any restrictions; with regard to clothing, dry goods, etc., restrictions were made rigid.

The question should be settled, whether there should be certain designated ports, at which all vessels from infected ports should be required to enter, such ports having a uniform code of quarantine rules, or whether they should be allowed to enter any port at pleasure, such ports having different systems of quarantine.

Dr. A. N. Bell, of New York, thought that quarantine regulations should bear with as much force on the prevention of the spread of disease as against its introduction. He had never heard of an epidemic of yellow fever on board a clean ship. He favored thorough disinfection and perfect cleanliness on all vessels leaving ports where yellow fever existed or was suspected, and inspection at frequent stages of their journey. He believed that disinfection could be made effective if done properly. Heat, with proper appliances, was the most certain means; but it could be accomplished by burning a sufficient quantity of sulphur, or by chlorine if the lurking places were properly exposed.—Recurring to the paper read by Dr. Campbell, he would suggest that quarantines hitherto, and, in particular, the new inland quarantines, were inconsistent with their pretended purposes. He read, from a printed copy, under date of "August 16th, 1879," as an example of *quarantine regulations of the present*, that "liquor, tobacco, salt, carbolic acid, lime, nails, ties, iron, soap and ice . . . will be admitted without detention, provided they shall have changed cars and been disinfected." Port quarantines, as commonly practiced, while equally ridiculous in some of their restrictions, are more dangerous. By congregating together and retaining indefinitely, numerous filthy vessels, infected or otherwise, from places prolific in the causes of epidemics, to eke out their poisons; and, above all, by confining persons to the atmosphere of such places until they sicken and die, is contrary to every principle of health and humanity—an obstruction to commerce, and a barbarous nuisance.

THE QUARANTINE OF THE FUTURE SHOULD BE:

(1.) All quarantine regulations of any place whatever should bear with equal force against the toleration or propagation of disease as against its introduction, and authority to prevent the introduction of disease in any place should be equally applicable against its exportation.

(2.) Any vessel in a filthy condition, whether she has disease on board or not, and regardless of the port of departure, shall be considered as having a gross bill of health, and shall be treated accordingly. And

(3.) All quarantines should be provided with the best possible means for the care of the sick and the protection of the well.

(*Proceedings to be continued in next number.*)

MEMPHIS DRINKING WATER.

By Charles Smart, M.D., U. S. Army.

Memphis, December 19, 1879.

To Dr. R. W. Mitchell, member National Board of Health, and of Committee on Sanitary Survey of Memphis:

Sir—I have the honor to report to you that I have concluded my investigations into the character of the water supply of Memphis; that I have analyzed a sufficient number of waters collected and stored in the different wards of the city to be able to generalize on summing up my results. Whatever system of water supply may be adopted by the city in the future, the point of immediate interest is the condition of the cisterns. These will have to be used in the meantime, while awaiting further developments. During my examinations I have met with many waters so polluted by sewage infiltration that an immediate interdict on their use appears called for. In many instances I have been enabled to do this by personal communication with the owners; but in other cases, where the water has been brought to me by the inspecting force, I have not had the means of notifying the consumers. In view of the importance of this subject, and of the large amount of facts gathered by analysis during the past few weeks, I have conceived it proper—without trenching on the ground to be covered in my report to the Secretary of the National Board of Health, and without awaiting the routine transmission of official communications—to furnish you with some memoranda from my laboratory record that, subject to your approval, they may be laid before the local authorities and utilized. To the better understanding of the subject a few words are necessary. On commencing my investigation in this city I made an exhaustive analysis of every water which was presented, determining the total amount of solid matter dissolved in the water, the organic matter, and all those substances which accompany or are formed by the breaking up of the organic matter. When a large number of these were collected, it became manifest, on reviewing them, that the amount of chlorine present in a cistern water could be made the test of soundness or leakage of the cistern. On superficial consideration, it would seem as if the total amount of dissolved solids would be the best criterion, as rain-water properly stored contains such a small proportion of these matters; but many instances occurred showing the presence of lime in comparatively large quantity, without that corresponding increase in the chlorine which would be expected if the lime salts siped in from the soil. The inference was that the lining of the cistern was undergoing solution by the water—an important fact, as bearing on the permanence of a cistern in its sound condition, but rendering the total solids, as determined by the balance, of no value as a test of leakage. On the other hand, rain-water contains but the merest trace of chlorine, collected, in its fall, from the sodium chloride which exists in the dust of the atmosphere. It gathers a little more from the roof that sheds it, so that rain-water taken from a cistern gives perceptibly more chlorine to the chemist than that collected in clear dishes. From a sound cistern the water can gather none; so that its presence in excess of the amount normal to roof-caught water is indicative of siping or leakage from the soil. In this city no water that has percolated the soil can be found without chlorine; and hence

no leak can exist in a cistern without its presence being detected by a determination of the chlorine present in the contained water. Having arrived at these conclusions, an examination was made of a large number of cisterns by means of the chlorine determination. Many were found so strongly charged by this contribution from the soil that a larger quantity of water was obtained from the cisterns in question for fuller investigation, to determine the quality of the matter indicating such an amount of chlorine leakage. The full analyses which I have placed on record add value to the simple chlorine determinations by indicating the probable quantity of the water which corresponds with a given chlorine impurity. But this is a matter for my detailed report. Accompanying this communication is a map of the city, on which are indicated the sites of eighty cisterns, the waters of which have been examined exhaustively, and of four hundred and fifty cisterns, the condition of which has been determined by an estimate of the chlorine. On the map, a black circle marks the position of a sound cistern, with a presumably good water; a blue circle marks a probably sound cistern; a green circle a cistern which probably sipes a little, or which, in a small proportion of the cases, obtains its excess of chlorine from the accumulations of vegetable matter washed down from the roof; a red circle indicates the situation of a leaky cistern, which, if the privy vault adjoins, contains contaminations from the same. The circles filled in with solid colors, black, green and red, indicate sound, siping and leaky cisterns respectively, the waters of which have been exhaustively examined, while the letters "G," "F," "B," "S," express the quality of the waters, as *good, fair, bad, sewage*, as the case may be. Many of the five hundred and thirty cisterns leak, but some, of course, to a much smaller extent than others. I accompany this with a list of the more exaggerated cases in which it appears to me that immediate action is demanded. The others, not in this list, but marked as leaky on the map, require attention, but not so imperatively. These should be filled up, if there is manifest danger of soil pollution from the surroundings; but if there appears no such danger, it would be sufficient to clean them out, and reline them with Portland cement. Another point which deserves attention is this: The proportion of leaky cisterns is large—in round numbers, one-third of the whole; while, again, of these the number largely contaminated may be judged of by the list. The number examined (five hundred and thirty) is sufficient to indicate the probabilities in the four (?) thousand or more cisterns which Memphis owns. If it appears imperative in the sanitary interests of the community to take action in the cases which have been examined and pronounced polluted, it is no less imperative to find out and remedy the many cases which have not been examined, but which, of necessity, exist. To this end I would respectfully suggest a continuance of these chlorine determinations by some competent person, in order that the leak may be stopped in those cisterns which it is proper to reline, and that the dangerous ones may be destroyed. The experiments are simple, do not occupy much time, require no expensive apparatus, and are accurate in their testimony as to the condition of the cisterns.

I have the honor to be, very respectfully, your obedient servant,

CH. SMART, M.D., *Captain and Assistant Surgeon, U. S. A.*

[*Memphis Appeal, Dec.* 21, 1879.

SOIL DRAINAGE IN THE VICINITY OF SAVANNAH, GEORGIA.

REPORT OF THE COMMISSIONERS TO THE GOVERNOR.

The following copy of the report of the Commissioners of Drainage of Chatham County, Georgia, is taken from the Atlanta *Constitution*.

Savannah, June 17, 1879.

To His Excellency Governor A. H. Colquitt:

Sir—In obedience to the second section of "An act to provide for the drainage of Chatham County, so as to protect the State from epidemics of yellow fever and other diseases, and to appropriate for said purpose one-third of the State tax of said county for the year 1877," the undersigned Commissioners respectfully submit the following report of the disposition of the money appropriated by said act:

The appropriation authorized for the purpose recited in the act has amounted to the sum of $27,633.73, as appears by the appended statement of Mr. T. M. Cunningham, Treasurer of the Commissioners. There remained in his hands at the date of his statement, May 24th, 1879, a cash balance of $8,559.34. As this balance has been appropriated to works of drainage now in their inception, and will be exhausted before the session of the General Assembly following, that of July, 1879, the Commissioners deem it their duty to construe the appropriation, of the State as if already applied and the work of the Commissioners completed, in order that they may by timely report of operations, necessarily slow and protracted, anticipate the requirements of the law under which they have acted, and early express for the people of Chatham County and for themselves, grateful appreciation of the beneficent legislation of the General Assembly in promoting the public prosperity through the public health. As health is essential to the happiness and welfare of the individual citizen, so too with communities, and in this wise application of money to secure the public health in Chatham County, the State enlarges the basis of future taxation on improved land, develops a new area for investment and industry, restores the shaken confidence of its second largest taxpaying community, and aids in fixing permanently within its jurisdiction, the second in rank of all the Southern points of export, controlling in 1878 a foreign and domestic commerce amounting to $42,299,073.71.

Setting aside these suggestions of a sound public policy in thus protecting the public health, it may be true for other reasons, that the State rightfully owed this appropriation. The public health in this locality has been greatly endangered by military operations during the war. Some of the leading works of drainage near and within the

city of Savannah were seriously impaired for the public defense, and excavations for fortifications extending for several miles around, and in many instances within its limits, became pestiferous fens. A portion of these military works were constructed under the direct authority of the government of Georgia. She was an active participant throughout the contest, and finally her own gallant militia were among the last who manned the defenses of Savannah. Is there nothing due by the State to the private citizens whose property was thus devoted to the public use, and rendered by the public authorities unavailable for cultivation and too pestilential for habitation?

In the appropriation of money for the drainage of Chatham County, the General Assembly has united public justice with sound public policy.

The Commissioners were organized on the 7th of March, 1877. With the terrible epidemic of yellow fever of the previous year fresh in their minds, they were deeply impressed with the importance of anticipating the coming summer. But the law required the funds to be derived from the State tax for the year 1877, and this would not be collected before the autumn of that year. The delay threatened by this cause was averted by a timely advance of money by the Central Railroad and Banking Company, under an arrangement assented to by the Comptroller General and approved by your Excellency.

It was evident that the purpose of the Legislature was to confer the greatest good, not on the greatest number only, but also on the largest contributors to the taxes of the county, and as the conspicuous object of the act was "to protect the State from epidemics of yellow fever," a disease essentially of cities, the first efforts of the Commissioners were directed to the improvement of the Springfield plantation, lying on the immediate eastern flank of the city of Savannah, and, indeed, within its jurisdictional limits.

This plantation comprises a portion of an extensive swamp, resting between the Little Ogeechee and Savannah rivers, naturally draining into both, but its greater area into the Savannah river. The Springfield plantation lies in the latter area, subject therefore to inundation from the swamp water in its rear and from the tides in its front. This involved the construction of very heavy embankments, not only against both these overflows, but especially for the walls of an escape for that of the swamp, which could be vented only on the ebb of the tide in the Savannah river. In addition, this escape required a basin sufficient to retain the collected water when drainage ceased on the rising and until it is resumed on the ebb of the tide.

The cultivated lands of the plantation required a system of tidal drainage independent of that just indicated, and a third system independent of both, for the water flowing down and springing from the western slope of the city.

These requirements had been already provided for by the municipality; but inadequately, because complete drainage of the Springfield plantation has been crossed by two obstructions, namely, by the embankment of the Central Railroad and by the Ogeechee canal. These had been penetrated by existing works, which, in the first instance, may be considered sufficient, but, omitting other defects in the drainage of the Springfield plantation, the conduits under the

Ogeechee canal have proven to be not only too small, but too high in their grade, to allow a practicable ultimate fall to the Ogeechee canal.

The chief outlay of the Commissioners has been directed to this locality; but its importance was paramount to all others of the most urgent objects within the scope of their duties. The means in their control and due regard to the general welfare did not admit the correction of obvious defects in the drainage of the Springfield plantation and the construction of appliances, which should evidently have followed the work they have accomplished; but they have greatly improved the system already established, and left the plantation in good sanitary and cultivable condition, capable of permanent maintenance at small cost.

The attention of the Commissioners was then directed to the drainage of malarial ponds on the southern side of the city, and of the Teynac swamp in its southeastern vicinity. At the same time, the moats of the fortifications already alluded to, which had become ponds, and productive of disease, were filled up, by restoring the borrowed earth. It is proper to state that the latter work has been carried out only in cases of urgency, where the excavations were close to neighboring settlements and most obviously injurious to the health of the inhabitants. This portion of the operations of the Commissioners has therefore been but partial, extending to the leveling of but a small part of the extensive fortifications around Savannah. Many of the most pestilential of the excavations made for their construction remain untouched, occupying private property, forbidding its cultivation, and greatly impairing, if not destroying, its value.

The Teynac swamp comprises a large body of highly productive land near the city of Savannah, in the hands of numerous proprietors. The drainage of this land is, however, very imperfect, for the want of a proper outlet. For this it is dependent on the Cuyler swamp, with which it is naturally connected. The latter constitutes the lowest valley of the southeastern slope from the summit on which the city rests, and sweeps southward, emptying into the tide-water of Vernon River. A radius of only fifteen hundred feet, sprung from the southeastern angle of the jurisdictional limits of the city, will describe an arc of a mile in length in the Cuyler swamp.

The drainage of the Teynac swamp has been partially established by the Commissioners, and though imperfectly, for the reasons just suggested, still with marked improvement in the cultivability of its highly valuable lands, and in the sanitary condition of the neighboring hamlets.

The obstacle to its complete drainage lies in the Cuyler swamp. The Commissioners have recently directed their active attention to the drainage of the latter, as the fundamental basis of the drainage and reclamation, not only of all the Teynac swamp, but of the whole district lying southeast of, and in the path of the prevailing summer and early autumn winds toward the city.

The drainage of the Cuyler swamp will involve an appropriate canal, sufficient in capacity to receive and carry off the water shed from about five thousand acres of land. It will be five and three-fourth miles in length, with strong embankments and parallel ditches, and with the apparatus necessary for regulating the outflow from the ad-

jacent lands and to arrest the influx of the tide-water at the mouth of the canal.

The Commissioners realize the magnitude of such an enterprise and the cost attending it, but they also appreciate its great public value. If their immediate efforts result only in the inception of the undertaking, but finally fix public interest in its completion, they feel that they will at least have initiated the accomplishment of the most important of all the objects of their duty to the State.

The balance remaining in their control from the State appropriation, as above stated, is scarcely more than sufficient for the preliminaries of such a work; but the Commissioners are confident that, with the sum derived from one-third of the State tax of this county for the present year, this work would be accomplished and all the beneficent objects (now only partially fulfilled) of the previous appropriation of the State would be practically consummated.

The Commissioners invite attention to the results of the previous State appropriation as demonstrating its material usefulness. Environs of the city, hitherto unimproved and uninhabitable, show marked evidences of cultivation and settlement, and the same wise public agencies, which have produced such proofs of development, have doubtless contributed to save the city from a repetition, in 1878, of the catastrophe of 1876. The loss to the State by the epidemic of yellow fever in the city of Savannah, in 1876, was computed by impartial authority to reach the sum of $5,862,357. The greater part of this large sum was of taxable value. It was all capital forever buried, principal and interest, in the graves of fifteen hundred citizens of Georgia. The expenditure of one per cent. of the above sum for the preservation of the public health in the manner authorized by the act of 1877, would have averted such severe losses and the shocking calamities by which they were attended. Inviting immigration and investment, it would have increased the population, widened the area of cultivation and improvement, and given greater stability to the best interests and welfare of the people.

At the risk of appearing to go beyond the limits of their duty, the Commissioners venture to suggest that these are not only among the highest objects of good government, but that such appropriations are in conformity with the constitution of Georgia. It is true that the constitution specifies with precision the purposes for which the powers of taxation over the whole State shall be exercised; but it is equally true that all the revenues of the State are not derived from taxation. Such appropriations would not necessarily be derived from funds collected from taxes, nor from any funds specially dedicated by the constitution, nor can they be understood as grants "of any donation or gratuity in favor of any person, corporation or association." They rightfully spring from the constructive, inherent powers of the legislature, acting for the public benefit, and for the most important purposes of all good government. It will not be denied, that the public funds can be constitutionally appropriated to the establishment and support of a quarantine system. This is intended for the protection of the public health against the importation of foreign infectious diseases, and is emphatically held to be one of the inalienable rights of the States. It would be as justly denied that the State is inhibited from appropriations for the protection of its people against domestic epidemic diseases, and from the establishment of such machinery as

will prevent their recurrence, secure the public health, and thereby promote the "interest and happiness of the citizen."

J. G. THOMAS, Chairman.
J. F. GILMER,
JOHN F. WHEATON,
C. C. CASEY,
JOHN SCREVEN,
Commissioners.

———o———

How to Dispose of Town Sewage to the best Advantage.—"How to dispose of the town sewage to the best advantage" is an important and momentous question. So many diversified opinions exist on this subject, and every system in use is more or less grumbled at; therefore, the solution of the problem is by no means easy. This subject has occupied the attention of the Trowbridge Local Board for some time. They wished to treat the sewage with chemicals, but the Local Government Board preferred a sewage farm, until one of their members, Mr. Clark, being in London, took the uncommon course of waiting upon the President of the Local Government Board, Mr. Sclater Booth, and personally explained the circumstances of the case. The members of the Trowbridge Local Board consider the results of the interview to be highly satisfactory. After a good deal of discussion upon two or three different schemes, and suggestions of modifications, etc., the Local Board have decided upon one that they consider in every way satisfactory, and this has been forwarded to the Local Government Board for their inspection. The following is a description of the scheme:

The buildings are to be erected and tanks formed upon two acres of ground purchased by Mr. Ludlow, adjoining the present outfall. The gaugings to ascertain the exact flow from the outfall have been delayed on account of the floods, and the engineers, Messrs. Gotto and Beaseley, and Mr. A. W. Estridge, have been unable to arrive at any definite results. To be on the safe side, they have assumed that one 20-horse power engine and boiler, with centrifugal pump of proportionate size, will be sufficient for raising the sewage and mixing the chemicals. The system intended to be used is the lime, sulphate of alumina, and carbon process. Three covered tanks are provided, two of which will be in use, while the other is being cleared of deposit. The effluent water will be strained off by a floating apparatus of a simple and effective description at the end of each tank, and passed through filters before being discharged into the river. The buildings and tanks are all above flood level. Flues from the boiler pass under each tank for the purpose of drying the deposit, the removal of which will be effected easily and speedily by means of a truck running on a tram at the bottom of the tanks, and passing through a penstock door at one end. This will avoid the necessity of raising the deposit by means of a crane or any similar contrivance. Accommodation is provided for duplicate engines and boilers, as the Board might at some time find such to be necessary. The estimated cost, including the expense of making a new approach road from Bradford Road, is £6,250. To cover this and incidental expenses, the engineers recommend the Board to apply for a loan of £7,000.—*Gas Trade Circular and Review.*

SOME OF THE EFFECTS OF ALTITUDE ON HEALTH IN LEADVILLE.

[Leadville Letter.]

I saw but very few cases of intoxication in the streets, though the 300 saloons in the city held out their best inducements. I was surprised at this, as one of the notable effects of the great altitude of the place (10,300 feet above the level of the sea) is that all fermented liquors intoxicate more quickly than at lower elevations. The boiling point, owing to the decrease of atmospheric pressure, is much lower than at Chicago, and the alcohol is sooner vaporized and taken into the circulation, producing intoxication much quicker.

The boiling point of water here is about 190°, instead of 212°, the effect of which in boiling beans, eggs and potatoes, etc., is that it requires a long while to cook them in an open vessel, and it is necessary to keep the pot well covered, or the water will vaporize and escape before being raised to the requisite degree for thorough cooking. At this elevation, much air is required to fill and satisfy the lungs, and breathing must be quicker in order to properly oxygenize the blood. It is said, too, that after one has been here for some time, the coloring matter of the blood becomes darker, being changed from the peroxide to the sesquioxide of iron. With a person suffering under any difficulty or disease of the heart, the effect of any long-continued exertion is to cause a dangerous degree of palpitation, and even with persons entirely well the pulse runs extremely high.

There are other and notable facts connected with this altitude. There are few birds seen here—perhaps for the reasons that flying is difficult in the light air. The common house fly, the summer pest of our Eastern house-keepers, is unknown here. There are some of the out-door blue-bottle variety, but they seem languid and tired. It is said, also, that cats cannot live here. This is probably owing to their delicate organization being unable to resist the rigor of the night air. So the "voices of the night" are not heard in this locality, and bootjacks are reserved for their natural uses.

Another result of the lightness of the air is that, having so little density, it is easily heated by artificial means. Our nights are uniformly cold—so cold that it is uncomfortable to sit without a fire; but a few pine chips or small sticks will warm an apartment very quickly. At the same time the sun's rays do not seem to have the heating power that they do in lower elevations. This seems to confirm the theory that there is no substantial caloric in the rays of the sun, but that heat is the result of chemical action, generated by the direct rays with the elements of the atmosphere—the directness of the rays and the density of the atmosphere. While standing high upon these mountains, even at a distance from any snow-drifts, and where the air is still, the summer sun has only sufficient power to make the air refreshing and pleasant, while you on the plains are sweltering under a torrid heat. In the shade of a rock or two it is always cool enough.

The effect of the altitude is the same as that experienced by balloonists, who, in ascending from the surface of the earth, even on the hottest day, soon find it necessary to don their overcoats and warmest clothing. In the night, here, a good supply of blankets is always necessary, and nearly every morning heavy frosts are found, and sometimes thick scales of ice are formed. The crests of some of the mountains and many of the deep ravines upon their sides are still full of masses of snow so compact that one can walk over them without sinking. A day or two ago, in visiting a mine close to the summit of Mount Bross, I was compelled to cross a field of snow hanging over the edge, which must have been a mile in length and probably in places twenty-five feet in depth.—*New Orleans Democrat.*

———o———

"Hard Times."—An old lady's lecture before the American Temperance Union, New York, Dec. 21st, 1879. Advice to the marriageable.—Mrs. Watson—a cheerful body of seventy summers, dressed in black satin, with a white shawl thrown loosely over her shoulders—stepped forward and peered over her glasses at the audience. The latter applauded for a second; then catching a glimpse at the old lady's old-fashioned bonnet, laughed a second time, and then quietly waited for her to begin. The cry of hard times she had heard everywhere, till she looked on it as a fashion. Ladies wear bright feathers in their hats because it is fashionable, though they know, to preserve their color, they are pulled from the wings of the poor bird while it is alive; and so much is this feeling impressed on women's minds, that if it became fashionable to wear little dogs' tails on the head, not a dog in town would have a tail to-morrow. There is a reason for the cry of "hard times," however, and it is the drinking habits and customs of this country. Seven hundred million dollars spent annually for liquor, or an average of $13 for each soul in it! Hard times of course there are, for this is more money than is annually spent for bread, clothes and churches all over the land. The entire value of church property in the United States is $354,483,581, or about one-half of the sum spent every year for rum. In New York City there are 15,000 liquor saloons, in which $60,000,000 annually is spent; and if in the whole of its history each saloon only turns out ten drunkards here is an army of 150,000 drunkards to look after—all recruited from our youth. Is it any wonder there are hard times with one liquor saloon in the midst of every ninety-six souls in the community?

The greatest agents to prevent these hard times are the young women. "I tell you, young ladies," said Mrs. Watson, "you ought not to marry a young man without money—at least $500. And he ought to have it, and he would have it, too, when he is old enough to take his wife, if he would not spend his ten cents a day for beer or rum, and his ten cents for tobacco. I tell you there would be no hard times if the money squandered for rum were spent on the necessaries of life and on the household. With temperance, too, would come peace, plenty and happiness, with a total cessation of liver complaints."

MARK TWAIN ON BABIES.

Mark Twain was present at the banquet given to Gen. Grant, in Chicago, by the Army of the Tennessee, and responded to the toast: "The babies; as they comfort us in our sorrows, let us not forget them in our festivities."

"I like that toast," he said. "We have not all had the good fortune to be ladies. We have not all been generals, or poets, or statesmen, but when the toast works down to the babies we stand on common ground, for we have all been babies. It is a shame that, for a thousand years, the world's banquets have utterly ignored the baby, as if he didn't amount to anything. If you will stop and think a minute—if you will go back fifty or a hundred years to your early married life and recontemplate your first baby—you will remember that he amounted to a good deal, and even something over. You soldiers all know that when that little fellow arrived at family headquarters you had to hand in your resignation. He took entire command. You became his lackey, his mere body-servant, and you had to stand around, too. He was not a commander who made allowances for time, distance, weather, or anything else. You had to execute his order whether it was possible or not. And there was only one form of machinery in his manual of tactics, and that was the double-quick. He treated you with every sort of insolence and disrespect, and the bravest of you didn't dare to say a word. You could face the death-storm of Donelson and Vicksburg, and give back blow for blow, but when he clawed your whiskers and pulled your hair, and twisted your nose, you had to take it. When the thunders of war were sounding in your ears, you set your face toward the batteries and advanced with steady tread; but when he turned on the terrors of his war-whoop, you advanced in the other direction, and mighty glad of the chance, too. When he called for soothing syrup, did you throw out any side remarks about certain services being unbecoming an officer and a gentleman? No. You got up and got it. When he ordered his pap-bottle and it was not warm, did you talk back? Not you. You went to work and warmed it. You even descended so far in your menial office as to take a suck at that warm, insipid stuff, just to see if it was right—three parts water and one of milk—a touch of sugar to modify the colic, and a drop of peppermint to kill those immortal hiccoughs. I can taste that stuff. And how many things you learned as you went along! Sentimental young folks still take stock in that beautiful old saying that when the baby smiles it is because the angels are whispering to him. Very pretty, but too thin—simply wind on the stomach, my friends. If the baby proposed to take a walk at his usual hour, 2 o'clock in the morning, didn't you rise up promptly and remark, with a mental addition which would not improve a Sunday-school book much, that

that was the very thing you were about to propose yourself? Oh, you were under good discipline, and as you went faltering up and down the room in your undress uniform, you not only prattled undignified baby-talk, but even tuned up your martial voices and tried to sing, 'Rock-a-by baby in the tree-top,' for instance. What a spectacle for an Army of the Tennessee! And what an affliction for the neighbors, too; for it is not everybody within a mile around that likes military music at three in the morning. And when you have been keeping up this sort of thing two or three hours, and your little velvet-head intimated that nothing suited him like exercise and noise, what did you do? You simply went on till you dropped in the last ditch.

* * Among the three or four million cradles now rocking in the land there are some which this nation would preserve for ages as sacred things, if we could only know which ones they are. In one of these cradles the unconscious Farragut of the future is at this moment teething; only think of it, and putting in a word of dead earnest, inarticulated, but perfectly justifiable profanity over it, too. In another the future renowned astronomer is blinking at the shining milky way, with but a liquid interest, poor little chap! and wondering what has become of that other one they call the wet-nurse. In another the future great historian is lying—and doubtless will continue to lie until his earthly mission is ended. In another the future president is busying himself with no profounder problem of state than what the mischief has become of his hair so early, and in a mighty array of other cradles there are now some sixty thousand future office-seekers getting ready to furnish him occasion to grapple with that same old problem a second time. And in still one more cradle, somewhere under the flag, the future illustrious commander-in-chief of the American armies is so little burdened with his approaching grandeurs and responsibilities as to be giving his whole strategic mind at this moment to trying to find out some way to get his big toe into his mouth—an achievement which, meaning no disrespect, the illustrious guest of this evening turned his attention to some fifty-six years ago; and if the child is but a prophecy of the man, there are mighty few who will doubt that he succeeded."

———o———

Experienced Advertisers contend that the value of a publication as an advertising medium is not shown so much by the quantity it circulates as the kind of circulation. The *Tribune*, on this point, says:—Quality of circulation is an element even *more important than its quantity*, and the standing of the paper is as important as either. There are journals whose readers accept, as a matter of course, what is found credited in their columns. There are others whose readers as habitually think of any sprightly matter found in them, "Well, that's lively; I wonder if it's true." These last soon come to regard the advertisements in their paper with the same doubt as the reading matter. No advertiser can judiciously select his medium, therefore, without considering the quality and the quantity of the circulation, and the general credence to which the paper entitles itself by its care to avoid sensationalism and to print the facts as they are.

Editor's Table.

Subscribers will please make remittances in postal money orders or checks.

Philadelphia Board of Health Report for 1876, now just published, comprehends 372 pages and numerous tables and diagrams, divided into two nearly equal parts : the report of the Board, by Wm. H. Ford, M.D., President ; and an appendix (I), by John E. Addicks, Health Officer, giving tabulated statistics of the births, marriages and deaths, and (II) Report of the Municipal Hospital, by Wm. M. Welch, M.D., Physician in Charge. The President's report opens with special reference to the Centennial, and expresses gratification for the health and prosperity which attended it. But this is immediately followed by a consideration of the increased death-rate .25 in a thousand, which he considers no more than a *usual* fluctuation, which would not have been noticed but for the Centennial, and, at least, sufficiently accounted for by the imprudence, excitement, fatigue, etc., incident to it.

"The most important fluctuations in disease were in the class known as zymotic diseases. There was a decrease in the deaths from croup, whooping-cough, and a very marked decrease in the mortality from scarlet fever. The mortality from measles, diphtheria, and cholera infantum, was greater than in the preceding year. Small pox prevailed to a very considerable extent, the deaths from this affection being 407,* an increase of 351 over the previous year.... Typhoid fever extensively prevailed, about which there was considerable discussion in the public prints in this and other cities. It was charged in a measure to the alleged insalubrity of the Centennial grounds, and of the locality contiguous thereto, and to the alleged impurity of the drinking water.... But these allegations, upon impartial investigation, were found to be, in the main, unfounded, and the sickness clearly traceable to ordinary causes. The total deaths from typhoid fever for the year were less than 800, or, on average, about 14 per week"—a larger number, and a larger ratio of mortality from typhoid fever to total mortality from all causes, than in any other city in the United States; and scarcely excelled by the most filthy cities of continental Europe.

"The total number of births, including 896 still-born, was 18,695, an increase of 762 over the number in 1875.

The number of marriages was 5,341, a decrease of 803.

Deaths, exclusive of still-births, 18,892. Population, 825,594.

Death-rate, 22.88 per 1,000 ; birth-rate (including still-born), 22.64 per 1,000 ; marriage-rate, 12.93 per 1,000."

Paving and re-paving the streets was carried on extensively during the year ; and, of various material used, asphalt is commended as

* 409, including two cases reported as chicken-pox.

the best for small streets and passage ways, and, if special care be taken in the construction, even for the main thoroughfares.

"The abattoir and cattle yards on the west side of the Schuylkill, north of Market Street, have been in use during the entire year, without causing the slightest annoyance to any one....

"The most important reform inaugurated during the year was in the system of removing excreta. On July 21, 1875, notice was given of the intention of the Board to abolish the old 'bucket and cart system' on and from the 15th of April of the succeeding year. Accordingly, from this latter date no licenses were granted unless the applicants were supplied with air-tight apparatus, pumps, and hose, and improved 'pitting' appliances, all to be indorsed by a qualified officer of the Board....

"No less than twenty different companies were licensed for the year. .... Thus has a most obnoxious method been swept out of existence, and now the only wonder is that it was tolerated so long....

"The total number of patients treated at the hospital during the year is 298; of which number, 199 were discharged cured, and 86 died; the death-rate being 28.85 per cent."

Typhoid fever is, of all diseases, pre-eminently a *filth* disease, traceable with as much certainty as fire from smoke. Wherever it exists it points unequivocally to unremoved filth; and is a disease, therefore, altogether and wholly preventable by proper sanitary measures. Notwithstanding, during the census year of 1870, there were, in the United States, 22,187 preventable deaths from typhoid fever. But had there been the same ratio to the total population of the United States as in Philadelphia during Centennial year, the mortality from this cause would have been over 37,000. And this was far from being all, as regards Philadelphia. All over the country fatal cases of typhoid fever, and other diseases nearly allied to it, were attributable to the Centennial visitation—the neglected drainage, criminal insufficiency of water-closets and bad plumbing. These conditions, so prominently manifest at the Centennial, and apparently to an extraordinary degree in Philadelphia, even yet, as judged by the prevalence of typhoid fever, are, of all causes of mortality, the most criminal, because the most easily preventable. Universal experience attests that privies and water-closets inadequately provided with means for speedy and complete cleansing and æration, are prolific sources of typhoid fever and kindred affections in all temperate latitudes, and with prevailing high temperature and moisture, of the still more deadly disease, yellow fever. And all the more dangerous are these conditions, because they are not infrequently the means of spreading the disease to distant places, and in proportion as other places comprehend like conditions of accumulated filth—the mass being subject to infection by the bowel discharges of any one afflicted with the disease: insomuch that the existence of typhoid fever, or allied diseases in any place, is *prima facie* evidence of filthy surroundings.

Death-rates per 1,000 inhabitants, annually, from all causes; and from causes which are usually preventable. Condensed from report of National Board of Health Bulletin.

Mortality in United States.	Population.	Total No. of Deaths from all Causes.	Deaths under 5 years.	Annual Death-rate per 1,000.	Consumption.	Small-Pox.	Diphtheria and Croup	Scarlatina.	Measles.	Whooping Cough.	Malarial Fevers.	Typh'd & Typhus F'rs	Diarrhœal Diseases.	Puerperal Diseases.	Yellow Fever.
Atlanta.—4 weeks ending Dec. 27th	39,000	35	12	10.9	2	..	..	..	..	..	..	2	..	..	..
Baltimore.—4 weeks ending Dec. 27th	400,000	569	229	18.5	93	..	36	49	..	7	3	16	2	..	..
Boston.—4 weeks ending Dec. 27th	375,000	582	203	20.3	115	..	46	5	1	14	..	4	10	3	..
Brooklyn.—4 weeks ending Dec. 27th	564,448	828	328	19.1	119	..	81	6	4	4	13	4	9	4	..
Cambridge,—4 weeks ending Dec. 27th	50,000	59	14	15.3	13	..	5	..	..	..	..	3	3	..	..
Charleston.—1 week ending Dec. 27th	57,000	33	15	30.2	3	..	1	..	..	..	..	..	3	..	..
Chicago.—4 weeks ending Dec. 27th	537,654	713	341	17.2	58	..	86	31	17	3	8	14	2	3	..
Cincinnati.—3 weeks ending Dec. 27th	280,000	270	87	16.7	52	..	10	8	..	3	2	18	5	6	..
Cleveland.—4 weeks ending Dec. 27th	175,000	222	95	16.3	12	..	25	32	..	5	4	2	2	2	..
Dayton.—4 weeks ending Dec. 27th	39,000	34	12	11.3	6	2	3	7	..	2	3	5	..	1	..
District of Columbia.—4 weeks ending Dec. 27th	160,000	272	92	0.8	56	..	2	..	..	..	..	..	4	..	..
Dubuque.—4 weeks ending Dec. 27th	30,000	14	9	10.4	4	..	3	1	..	..	..	1	..	..	..
Erie.—4 weeks ending Dec. 27th	30,000	30	14	13.	5	..	3	..	..	2	..	2	..	1	..
Evansville.—4 weeks ending Dec. 27th	37,500	58	29	20.1	5	..	2	9	..	1	3	2	..	..	..
Fall River.—2 weeks ending Dec. 27th	48,500	39	21	21.4	3	..	..	10	..	..	..	1	1	..	..
Hudson Co., N. J.—1 week ending Dec. 27th	199,000	62	32	17.4	7	..	..	4	..	1	2	..	..	..	..
Houston	30,000	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Indianapolis.—4 weeks ending Dec. 27th	97,000	121	50	16.2	10	..	6	13	..	4	5	5	4	..	..
Kansas City, 2 weeks ending Dec. 27th	61,000	20	6	8.5	1	..	23	..	..	..	1	..	..	..	..
Lawrence.—4 weeks ending Dec. 27th	40,000	44	16	14.3	9	..	2	..	..	1	..	1	1	..	..
Louisville.—4 weeks ending Dec. 27th	175,000	159	51	11.8	36	..	3	4	..	..	..	5	5	2	..
Lowell.—4 weeks ending Dec. 27th	52,000	67	23	16.	12	..	1	..	..	..	..	..	..	..	..
Milwaukee.—4 weeks ending Dec. 27th	124,000	131	61	13.7	15	..	8	2	..	2	..	1	..	2	..
Minneapolis.—4 weeks ending Dec. 27th	52,000	49	22	12.2	4	..	5	..	..	1	..	1	..	..	..
Mobile.—1 week ending Dec. 27th	40,000	15	4	19.5	5	..	..	..	..	..	1	..	..	..	..
New Haven.—4 weeks ending Dec. 27th	60,000	70	31	16.2	9	..	3	..	2	2	..	1	1	..	..
New Orleans.—4 weeks ending Dec. 27th	210,000	363	129	1.2	43	..	4	..	..	2	10	4	21	2	..
New York.—4 weeks ending Dec. 27th	1,097,563	1,982	779	23.5	351	..	78	33	66	16	23	18	37	15	..
Omaha.—4 weeks ending Dec. 27th	30,000	21	7	9.1	5	..	3	1	..	..	1	1	1	..	..
Philadelphia.—4 weeks ending Dec. 27th	901,380	1,082	304	15.6	192	6	30	11	1	8	2	23	4	2	..
Pittsburg.—4 weeks ending Dec. 27th	145,000	218	103	19.5	12	..	38	8	..	11	..	6	4	..	..
Providence.—4 weeks ending Dec. 27th	101,500	187	75	24.	15	..	12	52	..	1	..	3	..	..	..
Peoria.—4 weeks ending Dec. 27th	40,000	51	14	16.5	1	..	3	2	..	..	..	..	1	1	..
Quincy.—4 weeks ending Dec. 27th	35,000	38	16	14.1	6	..	..	..	..	3	1	3	..	..	..
Reading.—1 week ending Dec. 27th	40,109	20	10	26.0	1	..	4	1	..	..	..	1	..	..	..
Richmond.—4 weeks ending Dec. 27th	80,000	99	38	16.1	19	..	..	1	..	..	..	1	2	..	..
Rochester.—1 week ending Dec. 13th	90,000	23	10	13.3	4	..	2	1	..	..	..	..	..	..	..
San Francisco.—4 weeks ending Dec. 27th	300,000	291	76	12.8	50	..	10	4	..	3	2	7	9	1	..
Savannah.—2 weeks ending Dec. 13th	32,656	39	18	31.1	5	..	4	..	..	..	..	1	4	..	..
St. Louis.—4 weeks ending Dec. 27th	500,000	469	181	12.2	63	..	21	2	3	1	5	6	20	1	..
St. Paul.—1 week ending Dec. 27th	51,000	9	3	9.2	2	..	..	1	..	..	..	..	..	..	..
Utica.—1 week ending Dec. 6th	35,000	24	5	35.7	2	..	4	..	..	..	2	..	..	..	..
Wheeling.—4 weeks ending Dec. 27th	35,000	43	17	16.1	7	..	8	..	..	..	..	..	1	..	..
Wilmington.—4 weeks ending Dec. 27th	44,013	57	18	15.6	13	..	2	3	..	..	..	4	..	..	..
Mortality in Foreign Cities.															
Antwerp	169,981	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Buda, Pesth	309,705	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Bucharest.—1 week ending Dec. 13th	211,380	154	..	38.	..	23	..	..	..	..	..	5	..	..	..
Bremen.—1 week ending Dec. 6th	105,000	32	..	15.9	..	..	..	..	..	..	..	..	..	..	..
Brussels	399,482	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Belfast	212,000	..	..	..	..	..	..	..	..	..	..	..	..	..	..
*Berlin.—1 week ending Dec. 6th	1,062,500	513	..	..	..	..	..	..	..	..	..	5	..	..	..
Christiania.—1 week ending Dec. 6th	113,000	45	..	20.8	..	..	..	..	..	..	..	1	..	..	..
Dresden—1 week ending Dec. 6th	215,440	91	..	22.	..	..	..	..	..	..	..	4	..	..	..
Frankfort.—1 week ending Dec. 6th	120,000	9	..	33.9	..	..	..	..	..	..	..	..	..	..	..
Glasgow.—1 week ending Dec. 13th	578,156	343	..	30.9	..	..	..	..	..	..	..	42	..	..	..
Havana	195,437	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Leghorn.—1 week ending Dec. 13th	97,410	..	..	..	..	..	..	..	..	..	..	1	..	..	..
Leipsic	145,719	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Lyons	342,815	..	..	..	..	..	..	..	..	..	..	..	..	..	..
London.—1 week ending Dec. 13th	3,620,864	2,132	..	30.7	..	3	..	..	..	..	..	34	..	..	..
Liverpool.—1 week ending Dec. 13th	534,338	427	..	41.3	..	..	..	..	..	..	..	4	..	..	..
Leith	57,000	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Montreal.—1 week ending Dec. 27th	135,000	53	..	20.5	..	2	..	..	..	..	..	..	..	..	..
Paris.—1 week ending Dec. 11th	1,988,806	1,076	..	28.2	..	28	..	..	..	..	..	28	..	..	..
Rouen.—1 week ending Dec. 20th	104,902	73	..	36.3	..	..	..	..	..	..	..	..	..	..	..
Stockholm	169,429	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Trieste.—1 week ending Dec. 6th	127,873	83	..	33.8	..	2	..	..	..	..	..	..	..	..	..
Warsaw.—1 week ending Dec. 6th	336,703	165	..	25.5	..	..	..	..	..	..	..	..	..	..	..

* Report for Hospitals only.

THE SANITARIAN.

A MONTHLY MAGAZINE.

Vol. VIII. MARCH, 1880. No. 84.

PROCEEDINGS OF THE AMERICAN PUBLIC HEALTH ASSOCIATION.

NASHVILLE, TENN., NOVEMBER 18–21, 1879.

(*Continued from last number.*)

CAMPS AND DEPOPULATION IN YELLOW FEVER.

Col. John F. Cameron, of Memphis, read the following paper on "Camps and Depopulation at Memphis in the Epidemics, 1878-79."

On the appearance of yellow fever in the city of Memphis during the latter part of July, 1878, and the apprehension that a third visitation would, if in epidemic form, carry before it thousands of helpless dependent human beings, and no apparent avenue of escape, a few more thoughtful minds suggested the practicability of establishing camps at points accessible to supplies, and beyond the supposed limits of infected atmosphere.

The Government readily responded to a call for 1,000 A tents, and upon their arrival, August 15, camp Jo. Williams was established four and a half miles south of the city, on the line of the Mississippi & Tennessee Railroad. The site was selected for its isolated location, altitude, shade, ample springs of superior soft water, perfect drainage and accessibility to rail communication.

The sole fault in the selection of the grounds, both in 1878 and 1879 was their proximity to the city, which rendered it impossible to prevent visitation to and from the infected districts despite rigid rules, expulsion from camps, arrest by quarantine ticket, etc. The inhabitants entered the jaws of almost certain death rather than forego the pleasure of a drunken debauch, plunder, or the like.

In '79 this was in a measure obviated, as parties were arrested for violating the State quarantine law, placed in jail, or summarily dealt with. This deterred many from absenting themselves from camps, and rendered isolation more complete.

The camps were laid out on three swells of ground, stretching one-half mile. The tents were pitched along the crests, and in regular order, many in avenues facing each other, and along the edges of

slopes whose crests ranged from 30 to 150 feet in width. These A tents were pitched 5 feet apart, and numbered as are streets. The rows were designated—such as Otey avenue, Wright Row, etc. Each ridge was laid off separately and with regularity, such as Camp Wills, Camp Retreat, etc. Families and single women were assigned to separate camps; single men by themselves, and at sufficient distances to insure privacy. The colored people (but few in number) were by themselves. Two adults, or a family with one small child were assigned to one tent; such as were encumbered with trunks sewing-machines, or home comforts, were furnished an additional tent, set up in the immediate rear of the line, sometimes back to back, opening into each other. Cook stoves were, if owned by the refugees, set up and covered with lumber, brush, trees, etc., according to means or preferences. Persons, desirous of availing themselves of the security of camp life, simply presented themselves at the depot with such luggage and kitchen furniture as, within certain limitations, were allowed by the officer in charge (excluding soiled bedding, feathers, etc.) Such as claimed to have no means were moved from their residences by the committee of safety. On arrival at the camp, an officer stood ready, book and ration ticket in hand, to assign the applicant to quarters, when drays were in attendance, and sanitary or work relief in readiness to aid women and children to arrange their households. The name, age and color of applicant was there registered, date of arrrival, occupation, city residence noted, and the camp, avenue and number of each carefully registered. One hundred persons have been settled permanently in less than one hour. The camp was governed by flexible military rules and discipline. Two military companies were quartered in Camp Jo. Williams in '78, while in '79 a small detachment of colored troops, relieved from the garrison in the city daily, together with an armed sanitary force, aided by one Deputy United States Marshal, one Deputy United States Collector, to arrest suttlers and peddlers who oftentimes destroyed the morals of the camp by infractions of the internal revenue laws. This was inaugurated in '79, by which means the sale of intoxicating liquors was absolutely prevented in or about the camps. A Deputy Sheriff was also furnished, subject to the suggestions of the Superintendent of Camps, so that infractions of the law, of grave character, were summarily brought before a civil tribunal. Minor infractions on the part of minors were treated by the most effective domestic medicine, administered by the officer in charge. In '78 a pavilion hospital was erected, 30 by 80, lattice sides, built with tent-cloth, plank floor, with wood fires built after nightfall on brick surfaces four feet square at intervals down the centre. Cots were arranged on either side. The attendants, kitchen and sexton corps, were encamped round about; the hospital sink was built at very easy distance four feet by six, three feet deep, lined with brick. Iron grate bars were adjusted across the wall upon which a continuous fire burned. Into this all excreta, washings and refuse matter was cast and effectually consumed. The military headquarters were pitched a few yards distant from the same. This the officer in charge deemed necessary, as the printed regulations required that all persons stricken with the disease, should be, per force if necessary, removed on litters to the hospital.

It was found necessary that the officer in authority should set an example of indifference to attack, in order to appease, so far as possible, the constant anxiety of the population under his charge. Especially was this true in 1878, as depopulation went on slowly that year and infected people daily poured into the camps from the more pestilential portions of the city. Very many reached camp with the fever on them so that as many as seventeen persons fell victims in one night, not a few in their tents. In no instance, however, did they communicate the disease to their families or bed-fellows, as far as could be traced. The population of Camp Williams in 1878 was maximum, 650 souls.

Taking date of impregnation, (when registered) to development, the greatest length of the period of incubation was 14 days. No instance showing infection from contact in camp appeared; none who remained and observed the rules: prohibiting visitations to the city, were attacked; after 10 to 12 days residence, contact with the hospital, the sick or dead, did not prove of evil, though such was prohibited, and tolerably rigidly enforced. Number of sick, (yellow fever) in this camp, 186; number deaths, 58; average length of sickness to dissolution, 5 days; per cent. of mortality, 36.

No relapse; the sickened ones gained strength rapidly, and moved back to their quarters in line, after a few days convalesence. Curious incidents, Camp Williams, 1878: Four grave-diggers, one carpenter on constant duty at the hospital, carrying the sick, washing the bodies, sleeping on infected bedding in tents, wearing clothing stripped from the bodies of deceased, remained on said duty seven weeks, with perfect immunity from attack. All went into the city—became intoxicated—remained so three days. On their return, one fell in the woods and died, two others were treated in hospital at camp and died; one escaped. None had previously had fever. Col. John F. Cameron and the surgeon in charge, also the dispensary clerk, neither of whom had or have since been ill of *yellow fever*, caused a force to wash out the dead house, line same with blankets and tent cloth, and all three occupied same the latter part of the epidemic. Col. C.'s delicate health compelled him to abandon the tent for dryer apartments. They all pulled through safely.

Negroes hold doctors and hospitals in great terror, and can rarely be induced to take medicine. All removals required armed force. One instance: the inhabitants resisted the litter-carriers, acting under instructions to remove a man to the hospital, and it became necessary to turn out the guards to effect a transfer. That night he was stolen from the hospital, and in the attempt to convey him to the city in a wagon, he died on the way.

One instance further in this connection: A negro woman secreted her husband in a small tent, screened him through the aid of friends round about. His sickness was not reported to the authorities, and he perished there rather than be removed to the hospital. The same prejudice exists, in a less degree, among the whites, but superior intelligence warns the neighbors of the danger of infection and the case is brought to notice.

Isolation and disinfection by fire was first introduced here by Col. Cameron, in that year, 1878. Residing some four miles east of Memphis, near Buntyn Station, his home being isolated by being situated

in a large grove, he left his family, to take charge of the refugee camp, then to be established. He placed his family, wife, five children, and two servants, within the inclosure, provisioned them for ninety days, nailed up the gates and forbade contact with the outside world. With two exceptions, one of Maj. Hastings, who followed the example, no house escaped within a radius of five miles. In camps, the practice was to remove the sick, destroy the tent and contents, replace the same with new, and put the family or comrade of the stricken one in new quarters. It had a good moral effect on the adjoining tents. Fire effaces all traces of former infection. The presence of these tents, even though disinfected, remained a menace to new comers and old ones, too. None could be induced to occupy them. So with hospital bedding—when once contaminated, then burnt. 'Tis a fight in the dark. Fire is a known exterminator—disinfectants as yet *somewhat experimental.* Camp Williams broke up Oct. 31st, 1878. General health, good; class of population, mechanics, tradesmen, laborers, women of *industrious* habits, of indifferent morality, Catholics in faith, and in very many instances, paupers and indigents of both class and sex. Very few worthy people inhabited the tents of Camp Williams, proper; very many betook themselves to colonies, situated at convenient distances from supplies and medical attention near at hand. Temperature high, atmosphere light and oppressive, one continuous dry season, exceeding any year in the writer's experience. In short, the heat was intense.

Twenty-four thousand people had left the city *via* river, railroads and dirt ways. Difficulties stood in the way of locating camps. The country people protested north and east of us. Arkansas and Mississippi quarantined against us, (and it was a wise protest effectually carried into execution and heartily sustained to the end by a sober, approving press and public sentiment) *in those two States.* Railroads feared to engage to bear refugees to a point at easy distances from the infected city. Time was lost. At last a forlorn hope, aided by the enterprising and liberal-spirited Superintendent of the Mississippi & Tennessee Railroad, Maj. Mike Burk, the site of Camp Marks was taken possession of by armed pressure. Three hundred tents, 20,000 feet of lumber, cooking utensils, tools, carpenters, laborers, brick, oven material, masons, shovels and axes, were, on the night of the 28th of July, landed at what was afterwards known as Camp Marks. By the aid of fires and lanterns, Marks square was laid out. Two hundred tents arranged in regular order—headquarter tents, dispensary and kitchens erected—so that by five P.M. on the 29th—less than 24 hours—the camp was ready for refugees. Eighty-one registered that day. The population increased at the rate of one hundred per day. Work for their accommodation went on, keeping pace with the influx. In five days a large and well ventilated hospital was erected, 500 yards distant, and arranged in two compartments—male and female. The apex was built after the plan of a drying-house, lattice sides running up four feet with broad cone over all; glass windows, sliding-doors, soup-house, and sanitary and sexton force in tents round about. At the same time a warehouse was completed, 30 by 80 feet, also a slaughter-house and cattle pen.

In 10 days an oven (double) with capacity to bake 3,000 loaves of bread and molasses cake, was completed. So that, in less than 12

days, every department necessary to the subsistence of 4,000 people was at hand.

Ten days' rations were issued from the warehouse in the city. These were stored at camp warehouse, from which issues were made every other day, excepting bread, which was issued daily. Each tent or family was supplied with a ration ticket. All over eight years of age were classed adult, under eight years, half ration. The inhabitants, at the sound of the bugle, presented themselves, with buckets and sacks in hand, and took position in file; poles being rigged so as to form a narrow avenue to the distributing hands. The sexes alternated, one day the females took precedence, next the men—the women for the most part being of the semi-masculine type of the gentler sex, the Superintendent directed that the usual deference should not prevail. The table was eighteen feet long, behind which the different provisions for issue were placed successively from end to end, so that the applicants passed in front and were helped to bread, sugar, coffee, salt, meal, fresh meat, etc., until the entire bill of fare was completed, when they passed on out the opposite end.

First, at a desk stood the Assistant Superintendent, who, when the ration ticket was presented, turned to the name, arranged by numbers, and punched out from the margin of the ticket the number of rations called for.

This register was revised by a new census, taken every Sabbath morning, when all changes were noted. When the ticket was exhausted a new one was substituted. Five hundred tickets were in this manner served in two hours.

The meat was cut by experts, and in readiness for issue before sounding the call.

Fraud in procuring rations, petty theft, habitual insubordination, croaking, and nuisances were punished by immediate expulsion from the camp.

Wood and water was hauled by drays to such as were unable to bear the burden. Fires were kept burning in front of tents occupied by women and children, and during the early part of damp evenings. Water barrels were stationed at intervals throughout the camp, which were replenished daily, or as the consumption required.

Kitchen pits, 2 by 4, and 5 feet deep, were dug 25 feet in rear of tents, and at intervals of 40 yards; all slop and refuse garbage were thrown into same. The sinks were dug 100 feet in rear, and of width and length so as to be easily covered by one A tent, erected over same marked distinctly—*Males*—*Females*. The seats were neatly dressed off and with three nicely rounded openings. The sanitary force, at police call, made the rounds—with lime, zinc-iron solution and mops. Every vault and pit was administered to, and report made. The camp force consisted of one assistant superintendent, on the ground; one surgeon, in charge; one assistant commissary and quartermaster, three assistants; one chief clerk; one dispensary clerk; four sanitary hands, who were sextons, pit diggers, tent erectors, etc.; three bakers and one helper; one carpenter; one hospital matron; one hospital cook; one headquarter cook; one boss of men, wagons and tools, and three draymen, to which force was added, from time to time, *without pay*, laundrymen of the inhabitants.

Army rations were furnished, and by the schedule laid down in the United States Regulations. Blankets were dispensed by the surgeon in charge, when absolute necessity required. Beds were built of four forks, eighteen inches high, driven into the ground, covered with poles or plank, pieces of boxes or barrel staves, and straw, either loose or in ticks, laid thereon. The whole camp was policed daily, and from end to end. The trees were trimmed up and whitewashed, and no pains spared to insure comfort and health. Swings and whirligigs were erected for the children, and divine service was held weekly. General good order prevailed. It requires a humane, experienced man, having domestic experience, firm and determined—such a man only can make a refugee camp habitable.

Average number of people, drawing rations from Camp Marks, 1,304; number of yellow fever cases fatal, 9; average length of illness, —; number of deaths from yellow fever, 4 percentage.

The camp broke up Oct. 28, 1879; all hospital furniture, bedding, etc., were burned, the building fumigated and torn down, and sold on the ground. Two of the population were taken ill of the fever after their return to the city; both died. The general health of the camps was good, a low temperature prevailed, together with considerable damp, cloudy, and rainy weather. This, in the earlier settlement, might have produced disorders common to camp life, but a few weeks' acclimation, during a period of dry and pleasant weather, hardened the system, and fitted old and young for the inclement weather which followed. A city may be depopulated in this manner, at the rate of 1,000 per day. All that is required will suggest itself to the mind of an experienced field army quartermaster, a pushing, practiced surgeon, backed by a moderate purse.

INSPECTION OF STEAMBOATS AND OTHER VESSELS.

Dr. A. N. Bell, of New York, made a few remarks on the inspection of steamboats and other vessels. To illustrate his subject he had some rough drawings of the construction and internal arrangements of various vessels, showing where the danger from filth was most pronounced and least accessible. After explaining from these drawings the different constructions, and the apartments to which inspections were, unfortunately, too commonly limited, he designated the lurking places of filth, infected or otherwise, to be in entirely unventilated portions, the *bilge* lying under the flooring, between it and the keelson, and the *limbers*—the spaces between the timbers, or *ribs*, as they are sometimes called. These hidden places of vessels, and of steamers especially, were shown to be the final receptacles of the drippings of oil in the care of the machinery, the debris of cargoes, the leakage from without, and the stagnant mixture known as *bilge-water*. He stated in this connection that the promotion of commerce was consistent with the promotion of health, in this as in other particulars. No ship, he would say to those interested in commerce, was a good investment, which was not so constructed as to be a healthy abode for men. Stagnation, death and decay went hand in hand in both the materiel and the personnel of commerce everywhere. In showing these receptacles of filth on board vessels, he also described how, in the rolling at sea, the filthy mud stirred up in the bilge-water, and

which is so offensive on account of the decomposition of the filth which it holds in solution or mixture, is thrown up into the limbers, between the lining and outside planking, and clings to the closed-in and inaccessible spaces. It is evident, he said, that the practice of pouring carbolic acid, or anything else, into the pumps, was altogether inadequate to cleanse these recesses, extending as they do from the keelson on either side of the vessel, in many cases above the water-line. In illustration of the amount, he mentioned his having, a few years ago, superintended the work of breaking out and cleansing the old steamship *Illinois*, in order to fit her for a floating boarding station for the New York quarantine. The filthy mud removed from her limbers was estimated at the enormous amount of one hundred and twenty tons, and it was so offensive as to be a nuisance to the neighborhood, and required speedy removal.

He next showed how the barges on the Mississippi river are constructed, their liability to the most unhealthful conditions, and the danger to the public on account of infected cargoes, subject as they frequently are to the emanations arising from tons of filth in process of decomposition, saturating everything on board.

He referred, in conclusion, to some modern-built iron ships in particular, without bilges and limber spaces, but still subject to dangerous accumulations on account of numerous closed recesses, accessible to drippings, leakage and foul emanations, requiring scrupulous care on the part of their masters, which, while less subject to contamination than the other classes of vessels described, were nevertheless like them, in the necessity for constant sanitary supervision, and no exception to what he conceived to be the only means of preventing the spread of disease by commerce, namely: a system of searching inspection, and the cleansing and disinfection of all filthy vessels *at the port of departure, at all ports, and at all seasons, before being allowed to take cargo or passengers on board.*

POWERS OF THE NATIONAL BOARD OF HEALTH.

A paper from Dr. Gustavus Devron, of New Orleans, was read by the Secretary. He approves the establishment of the National Board of Health, which he thinks should have exclusive control of the National quarantine, the State Boards of Health being left to get up statistics and to enforce the rules and regulations that might be promulgated by the National Board.

STATES' RIGHTS AND A NATIONAL QUARANTINE.

Hon. E. E. James, of Chattanooga, addressed the Association as follows:

Mr. President and Gentlemen of the Association: I have been listening with a great deal of pleasure for the last few days to the reading of many very learned and erudite papers and speeches from eminent gentlemen upon the subject of epidemic diseases, and have been greatly instructed thereby. And from the conflicting opinions of the many gentlemen so distinguished in medical and sanitary science I have been convinced that yellow fever is an epidemic, exotic and indigenous, foreign and domestic, climatic and anti-climatic, national and international. And, so believing, I am in favor of that govern-

ment having the greatest power and longest purse taking charge of the great work of the control of epidemic diseases. The Constitution of the United States says:

"The Congress shall have power to regulate commerce with foreign nations and with the several States."

The Constitution confers no power to make sanitary regulations of any kind, and yet the power to co-operate with foreign nations, to make general regulations applicable to foreign commerce, in all its ramifications, for the preservation of public health and commerce, prevention and spread of disease, to enter into conventions with foreign nations, to establish commissions of inquiry for that purpose, is admitted. The power grows of the fact that it is a power incident to and necessary to the general powers granted. It is the power to repress or to prevent that which materially interferes with and may destroy commerce. The same power necessarily flows from the power to regulate commerce between the States. Epidemics are of themselves destructive of almost all commercial intercourse. The object is general, and, therefore, one properly within the sphere of the Federal Government. The only question there is: whether or not it has been granted? It is as clearly inferable and as clearly incident to that power to regulate commerce between the States as the power to provide sanitary regulations, coincident with the foreign commerce, is incident to and inferable from the grant of power to regulate commerce between the United States and foreign nations. We spent millions to make the Mississippi the highway of twenty States, and then pause on the brink and declare that there is no power to make the appropriation available. The States have no such power, for their authority is infra-territorial and ends with the border of each State. This evil is general, and affecting Memphis, New Orleans or Chattanooga, also affects the surrounding States and the national highways. The Tennessee and the Mississippi and their tributaries. The grant of power must carry as an incident all that is necessary to give it effect, the regulation or removal of all contemplated and of all newly-arising obstacles which would render nugatory and void the powers granted. Being general, and not local, it is a proper case for the Federal and impossible to the local governments, which can at most only co-operate within their own territory. This power has been granted because it is incident to that already granted, and without its exercise that power must come to naught whenever an epidemic supervenes. Therefore I am in favor of the exercise of this power by the National Government, in the permanent establishment of a National Board of Health and its maintenance, with all the powers necessary to effect the preservation and promotion of the general public health by quarantine, and any or all means that said Board may think necessary.

In the epidemic of 1878, when the people of the country did not understand the disease any better than the physicians (laughter), they got scared and fell back on the barbarian's right of self-defense, and refused the privilege of establishing a camp two miles out from, Chattanooga, on the high lands. A camp was established, however and that night citizens with shot guns went over and burned it down and swore one should never be established there. The camp was

near the Georgia line, and men with shot guns walked over from Georgia and crushed out Tennessee sovereignty. Another camp was established and the right of eminent domain maintained over that camp by shot guns. [Laughter and applause.] In case of an epidemic there must be some central power which will be respected and can enforce its mandates. But when the matter is left to some "Jigadier Brindles" or cross-roads Magistrates public health cannot be maintained. He knew the reason why the railroads hated to ask Congress for a national quarantine. If they had done so it would be said: "Ah, you are agin State rights; you are agin the Legislater, and we'll restrict your trade and travel and ruin and bankrupt you." Now, he came up there to ask men who didn't own railroads to any considerable extent, he presumed [laughter and applause] to do that which would promote the public health. He was a Democrat, and that was why he belonged to this Association. [Laughter.] He was opposed to Uriah Halstead spelling nation with a big N, and he was still further opposed to spelling state with a big S if epidemics were to run riot over the land.

Dr. Jerome Cochrane, of Mobile, approved the resolutions in general, though some of its expressions needed modifying. The National Board of Health had the right to quarantine against foreign ports, or to prevent the carrying of the fever from one State to another, but no right to lift a finger to prevent the fever from being carried from one part of a State to another. Their measures were all supplemented with more or less rigorous rules of State and local boards, and efficient work by the railroads. The National Board of Health had endeavored to have adopted a uniform system of rules and regulations. But circumstances altered cases so greatly that what was required one year or at one place, would not be required another year at another place.

Dr. O. R. Early, Columbus, Ky., said that in the consideration of this subject it was important to go back and study facts which have occurred in the past. In 1855 the ship Ben Franklin arrived at Norfolk for repairs. While lying at the wharf at Gosport, opposite Norfolk, she was pumped out dry, her bilge water flowing into the river. The Fever broke out in Norfolk within a week afterward, beginning at a point just opposite where this bilge water found its way into the river. In 1878 a ship arrived in New Orleans with a clean bill of health, having no sickness on board. Within three days after her hatches were opened her crew were taken down with the fever.

In view of these facts and others like them, he had thrown his views into the form of a series of resolutions, which he offered, not desiring to have them discussed, but that they might go to the executive committee in regular course:

Whereas, There being a diversity of opinion as to the cause of yellow fever in this country, at the same time the large majority acknowledge that its development is dependent upon foreign spore or fomite, hence we all recognize the necessity of keeping at a distance this fecundating or germinating agent, and we know of no more efficient agent or action to effect this; therefore,

Resolved, That this Association earnestly and respectfully ask the National Board of Health to establish, at the proper time, an efficient,

systematic and judicious quarantine at all ports of entry or approaches to this country.

Resolved, That the National Board of Health be also requested, if it be in their power, either as an organized body or through Congress, to forbid by law enacted for this purpose, vessels being freed from their bilge water within the jurisdiction of this country, unless it be absolutely a necessity to preserve the crew and ship from destruction.

Resolved, That the National Board of Health be also requested to place upon all the avenues of approach to this country, medical men as sentinels, who are fearless enough to discard private interest in the performance of their public duty when they clash with the public safety.

As an evidence that yellow fever was sometimes carried by *the person*, and not necessarily by his effects. Dr. Early mentioned the case of a man who left Vicksburg where fever was prevailing, for Jacksonport, Miss., leaving his baggage to be forwarded by a different route. Nine days after he was attacked by fever. He was stopping at a house where a large number of ministers were stopping, together with their families and servants, none of whom took the disease.

WIDOWS AND ORPHANS OF PHYSICIANS.

A report from a committee appointed at the meeting of the Association at Richmond last year, to collect and distribute money for the relief of the widows and orphans of physicians who died during the epidemic, having been called for, Dr. Hewitt, of Minnesota, chairman of the committee, reported that no action had been taken by the committee because no cases requiring relief had been brought to their notice, and also because it was understood that Dr. Peters, of New York, had collected a considerable amount of money, which he was using for that purpose.

Dr. Peters said the movement with which he was identified originated in the Medical Association of New York, each member of which made a small contribution for that object. Afterwards, considerable sums were received by him, being unexpended balances remaining in the hands of the Mayor of the City of New York—from the Chamber of Commerce, of New York, from the Masonic lodges of Richmond, Va., through Dr. Cabell, and from Hon. W. M. Evarts, Secretary of State, being the unexpended balance of contributions by foreign donors and other parties, amounting in all to between $6,000 and $7,000. From the newspapers and other sources was obtained a complete list of the physicians engaged; next a list of deaths was obtained, and with this list the name of every widow of a physician was procured, amounting to one hundred and one, of which number about thirty were in need of, and obtained such relief as their circumstances seemed to demand, and the means in hand would allow. It is worthy of remark, that none of these ladies sought aid as mendicants, but all made efforts to provide for their own necessities, and as soon as practicable, reported to him, expressing the desire that the proffered relief might be extended to others whose necessities were greater.

The Medical Society of New York do not desire to become the head centre and distributor of this fund, but prefer that each State should

have its own separate fund and shall make provision for those within its own borders.

WORK OF THE NATIONAL BOARD OF HEALTH.

The discussion of the resolutions offered at the morning session by the Advisory Committee was resumed.

Dr. S. C. Cobb, of Pensacola, Fla., said the people on the seaboard, knew more about the value of the benefits that had been derived from the aid of the National Board of Health. Foreigners occasionally endeavored to break the quarantine, but the law was sufficient to be enforced. The sum of $5,000 had been appropriated by the National Board of Health, but of this sum only $2,000 had been used. Pensacola was a small place, but a number of foreign ships landed there. Inspection stations had been established at Tampa, Pensacola, Key West and Jacksonville, along a line of coast of 800 miles. Each ship was charged $5 for inspection. He thought it better that this work should be undertaken by the General Government, as frequent municipal elections and consequent changes in Inspectors were not wise.

Dr. Lloyd Howard, of Baltimore, said that the object of these resolutions, as he understood them, was to give a hearty indorsement of the National Board of Health, and he thought there was none who could not give it heartily. He was sorry that the recommendations of this Association, last year, had not been carried out in the entire isolation of the first case of fever in Memphis. The Association had not been informed of the action of the National Board as fully as he had hoped; yet, with the knowledge before him, he would cheerfully vote for the resolutions.

Dr. Elisha Harris, of New York, said that the duty of this country in calling an international congress was wise, and he hoped the resolution in that regard would be fully indorsed.

Dr. Pinckney Thompson said he felt sure that many things were done by the National Board last summer that could not have been done either by Memphis or the State of Tennessee, or other places where the fever existed. Congress had the power to do more than any State or municipality to enforce quarantine.

Dr. T. A. Atchison, of Nashville, said that in order that silence might not be construed into ingratitude, he would speak a few words, although hoarse. Scarcely had the Tennessee State Board of Health been given the breath of life than it was called into action. The State appropriation was meagre, even for a time of peace. Without aid from the National Board of Health they could have done nothing. It was then that the National Board of Health stepped in and helped to protect not only Memphis, but the people outside of that unfortunate city. He was in favor of letting the National Board of Health continue to aid State boards with their wise counsels and means. No reasonable appeal had ever been made to that body that had not been granted. He was in favor of holding up the hands of the National Board in their grand and noble work.

Dr. Jennings, of Little Rock, said that, in remarks made at the morning session, he had incidentally alluded to the obligations which the State Board of Health, of Arkansas, were under to the National Board of Health. He now desired to emphasize that matter. Almost

immediately on the breaking out of the fever, the State Board found themselves powerless to do anything that would be effective. Application was made to the National Board of Health for help in the emergency, and they promptly gave that help in unstinted measure, which was available in protecting the people of Arkansas from the inroads of fever from the city of Memphis. Had it not been for such help in time of need, the State Board of Health would not have been able successfully to combat the approach of the fever. He was perfectly satisfied with the action of the National Board of Health, and was willing to leave the whole matter of direction in their hands. They had helped his people once, and would help them again if necessary. He was not particular to inquire minutely into the *how* of the propagation of the fever—the questions whether it was carried by persons, baggage, or freights. What he did care for was to keep the enemy from coming within their borders at all.

Dr. Azel Ames, of Massachusetts, said that the warm language of eulogy which he had just heard accorded to the National Board was not more than it deserved. When you contemplate its work, its opportunities, its means and contracted powers, and the brief space of its existence, surely no word of praise had transcended the truth and the merits of the case. He drew a parallel between our National Board of Health and the corresponding body of Great Britain, and in the contrast, reflecting how many years of assiduous labor and trouble the latter had encountered before reaching its present status and the progress made by their own National Board, he saw everything that was encouraging. For himself he had the warmest interest in scientific research. He was sure, under the care of the National Board, the health of the country would be looked after, impartial of section. He hoped that the matter of yellow fever inquiry, already begun, would continue to be diligently prosecuted, that a like manner of investigation be pushed forward in the North, as regards typhoid fever and diphtheria. He hoped the time would shortly come, when the Board, buoyed by the sympathy and encouragement of the people, would obtain also the fullest exercise of the power and means from the National Government for the carrying out of its noble mission.

In supporting these resolutions—and he regarded them as wise and timely—he would say for the National Board, "God speed you."

The President said the resolutions were now before the Association for action.

Dr. Pinckney Thompson moved their adoption, and this was carried without opposition. In the fifth resolution the words "national quarantine" were striken out, and "the execution of the quarantine laws of the United States" substituted.

A NON-INTERCOURSE QUARANTINE.

Dr. Choppin (President Cabell having resumed the chair) offered the following resolutions:

Resolved, That a committee on quarantine be appointed by the American Public Health Association, whose duty it shall be to formulate a system of quarantine with such rigor and precision as to prevent the importation of the specific cause of yellow fever.

Dr. Choppin said that by a non-intercourse quarantine, he meant the detention of vessels at quarantine station, disinfection, separation of the sick from the well. The value of commerce with the ports from which fever was imported was much less than supposed—probably $500,000 to New Orleans—yet the loss by the results of the importation of two cases in 1878 were not less than $12,000,000, and for the country over $175,000,000. There was great hope for utterly stamping out the disease in Memphis and New Orleans by rigid quarantine, and the prevention of any further introduction of the poison.

Dr. J. P. Dake, of Nashville, opposed the resolution, because the National Board of Health had this question under consideration, and the resolution was unnecessary.

Dr. Elliott, of Savannah, declared himself to be an advocate of strict quarantine, but was not in favor of stopping commercial intercourse with the West Indies for six months in the year. He believed such a course to be unnecessary. Will it not answer every purpose to stop the ship at quarantine, discharge the cargo, and thoroughly disinfect the vessel itself? Let this method have a fair trial before proceeding to declare non-intercourse. If that plan is thought to be unsafe, the vessel might be unloaded at quarantine, discharging cargo into lighters, then loaded in the same manner, and sent away without coming up to the city at all. At least let this plan be thoroughly tried before proceeding to such extreme measures as interrupting commerce and declaring absolute non-intercourse during the six months of the year when fevers prevail.

Dr. Lloyd Howard thought there ought to be a difference between quarantine rules for different ports. He did not believe in an absolute non-intercourse quarantine.

Dr. Choppin advocated the resolution as necessary.

The reading of the resolution was called for.

Dr. A. N. Bell, of New York, opposed the resolution because shutting off ships would perpetuate disease, as the ships would still retain the infection for years, unless cleansed. We should not be afraid to take hold of the ships and cause the infection to disappear.

Dr. S. C. Cobb, of Pennsylvania, indorsed Dr. Bell's views.

Dr. C. F. Folsom, of Massachusetts, called for the question, and the resolution was rejected.

CONSTITUTIONAL AMENDMENTS.

Dr. Folsom made a report of the Executive Committee on proposed constitutional amendments recommending the adoption of the following resolution:

Resolved, That the Executive Committee recommend to the Association the rejection of the proposed amendments to the constitution; that an advisory committee, of which the President of the Association shall be Chairman, be nominated by the Executive Committee for appointment by the President, to be confirmed by the Association, this committee to be constituted of one member from the National Board of Health, one from each State Board of Health, one from each State not having a State Board of Health, and one from the medical departments of the army, navy and marine hospital service.

Dr. Billings offered an amendment striking out the words "Board of Health, one from each State not having a State Board of Health." Adopted.

The resolution, as amended, was adopted.

Dr. Billings announced the titles of the following papers recommended by the Executive Committee to be published with the proceedings of the Association, time not admitting of their being read before the Association:

"Post Mortem Examinations and their Relations to Public Health," by Dr. E. G. Janeway, New York.

"Action of Vegetable Acids on Tin," by Prof. Chas. E. Monroe, United States Naval Academy.

"Water Supply," by J. Chandler, M.D., Memphis.

"International Quarantine," by Dr. Bushrod W. James, Philadelphia.

"The Most Effective Way of Preventing the Spread of Venereal Disease," by the same.

"On the Sanitation of Nashville," by J. Berrien Lindsley, M.D.

THE ADVISORY COMMITTEE.

The President announced the appointment of the following Advisory Committee:

Alabama, R. D. Webb; California, Dr. Henry Gibbons; Florida, Hon. S. C. Cobb, Pensacola; Georgia, Dr. H. F. Campbell; Illinois, Dr. J. H. Rauch; Indiana, Dr. J. F. Hibberd; Mississippi, Dr. Wirt Johnston; Louisana, Dr. D. C. Holliday; Maryland, Dr. James A. Stewart; Massachusetts, Dr. Azel Ames; Pennsylvania, Dr. Henry Hartshorne; Ohio, Dr. T. C. Minor; Missouri, Dr. George Homan; Rhode Island, Dr. E. M. Snow; Tennessee, Judge J. W. Clapp; Virginia, Dr. L. S. Joynes; Michigan, Dr. H. B. Baker; Iowa, Dr. W. D. Middleton; West Virginia, Dr. James E. Reeves; District of Columbia, Dr. J. M. Toner; New York, Dr. Elisha Harris; North Carolina, Dr. T. F. Wood; South Carolina, Dr. Robert Lebby; Connecticut, Dr. C. W. Chamberlain; New Hampshire, Dr. S. P. Conn; Vermont, Dr. H. D. Holton; Texas, Dr. R. Rutherford; Wisconsin, Dr. E. L. Griffin; Minnesota, Dr. C. N. Hewitt; New Jersey, Hon. S. Lilly; Arkansas, Dr. A. L. Breysacker; Kentucky, Dr. Pinckney Thompson; Delaware, Dr. L. P. Bush; United States Army, Dr. T. A. McParlin; United States Navy, Dr. B. F. Gibbs; National Board, Dr. Stephen Smith; Commissioner of Education, Gen. John Eaton.

The following resolutions were adopted:

Resolved, That the replies to schedules under Circular 2, of the National Board of Health, be referred to that Board.

Resolved, That this Association, in adopting the recommendation of the President, that the clerical and traveling expenses of the Secretary, necessary to the performance of his duties as Secretary, be paid by the Association; recommend also that he be paid the sum of $100 for the past year's services.

Dr. Early's resolutions, presented at the afternoon session, were tabled, in accordance with the recommendation of the Executive Committee, as were also resolutions by Dr. T. M. Stevens, of Indian-

apolis, favoring the establishment in each State of hospitals for the treatment of contagious and infectious diseases.

The following were also tabled, in accordance with a similar recommendation:

By Hon. E. A. James, of Chattanooga:

Resolved, That it is the opinion of this Association that yellow fever can originate in the United States.

By Dr. A. N. Bell, of New York:

Resolved, As the sense of the A. P. H. Association, we hail with eminent satisfaction the determination of the people of Memphis to institute, forthwith, such means of practical sanitation as may be deemed to be essential for the redemption of that city from yellow fever; and that we will, individually and collectively, exert ourselves in the promotion of the work.

RESOLUTIONS OF THANKS.

Dr. John S. Billings said that the work of the present meeting was now drawing to a close. It had been the largest, most satisfactory and most pleasant meeting he had ever attended. This had been largely due to the efforts of various corporations and individuals in this State and city, and elsewhere.

He also offered the following resolutions, which were unanimously adopted:

Resolved, That the sincere and hearty thanks of this Association are hereby tendered to the following corporations and individuals for valuable services rendered:

The Nashville, Chattanooga & St. Louis Railroad Company; the East Tennessee, Virginia & Georgia Railroad Company; the Louisville, Nashville & Great Southern Railroad Company; the Illinois Central and New Orleans, Chicago & St. Louis Railroad; the St. Louis & Iron Mountain Railroad, for free passes both ways over their lines to the delegates attending the seventh annual meeting of this Association. To the Central and the Westesn & Atlantic Railroads, of Georgia; to the Washington City, Midland and Great Southern Railroads; to the Atlantic, Mississippi and Ohio Railroads; the Memphis & Charleston Railroad; and all roads in Tennessee for half-fare and reduced rates to delegates.

To the General Assembly of the State of Tennessee for the use of commodious rooms in the State Capitol building.

To Maj. John L. Brown, Superintendent of the Capitol, for attention and courtesies.

To the teachers and trustees of the various educational institutions in the vicinity of Nashville.

To Capt. W. Stockell, Chief of the Nashville Fire Department, for invitations.

To Mrs. S. K. Hatton and her accomplished daughter, Miss Emily Hatton, for their unremitting attentions to the visitors to the State Library, in exhibiting and explaining the valuable and interesting collections which are there preserved.

To the Citizens' Auxiliary Sanitary Association, of Nashville, for three hundred copies of the third report of the Board of Health of the city of Nashville.

To Mrs. James K. Polk, for her invitation and hospitable reception.

To Dr. John M. Lawrence, for invitation to visit the Hermitage.

To Gens. William Harding and W. H. Jackson, for their entertainment and reception at Belle Meade.

To the Bell Telephone Company.

To the Western Union Telegraph Company, for its liberality in transmitting dispatches for the officers and members of the Association free of charge.

To the *Daily American* Publishing Company, for full, accurate and correct reports of the meeting, and for other courtesies extended by them.

To the *Daily Evening Banner*, for courtesies and attention shown the members.

To the Local Committee and the citizens of Nashville, for their cordial hospitality and attention to the wants of the members, which has done so much to make this a harmonious and enjoyable meeting.

To Dr. J. Berrien Lindsley, Secretary of the Local Committee, whose laborious services and tireless energy has effected the most successful meeting in the annals of this Association; and to his assistant, Judge Pitkin C. Wright, for his courtesy and attention.

Dr. A. L. Gihon offered the following resolution, which was adopted by a rising vote with hearty applause.

Resolved, That the American Public Health Association, recognizing the ability and dignity with which its retiring President, Prof. Jas. L. Cabell, of the University of Virginia, has performed the onerous duties of his office, gratefully tender him its thanks for the invaluable service he has rendered it, and the great cause in which it is enlisted, and assures him that he carries with him the respect and affectionate regard of every one of its individual members.

Dr. Hewitt, of Minnesota, offered the following resolution, which was adopted:

Resolved, That the thanks of the Association be presented to Dr. H. B. Baker, the retiring Treasurer, and that the Secretary be instructed to communicate to him the genuine condolence in his recent bereavement.

President Cabell said that he did not think the preservation of good order was at all due to him, but to the uniform good conduct of the members. He thanked them kindly, and then declared the Association adjourned.

—o—

OFFICERS ELECTED AND NEXT PLACE OF MEETING.

President, J. S. Billings, M.D., U. S. Army; First Vice-President, S. Choppin, M.D., New Orleans; Second Vice-President, Prof. R. C. Kedzie, Lansing, Michigan; Treasurer, J. B. Lindsley, M.D., Nashville, Tennessee; Secretary, E. H. Janes, M.D., New York. Executive Committee: Dr. C. B. White, New Orleans; Dr. J. L. Cabell, Virginia; Dr. E. M Hunt, New Jersey; Dr. J. D. Plunkett, Tennessee; Dr. C. F. Folsom, Massachusetts; Dr. A. L. Gihon, United States Navy.

PLACE OF MEETING: New Orleans.

AN OLD DOCTOR'S STORY.

We were a knot of doctors, enjoying ourselves after a meeting of the Hippocratic Medical Society, whose members were accustomed to assemble once a year for purposes of mutual edification and improvement. Dr. Galen Cupps was in the chair. He was our Nestor, our old man eloquent; a living professional legendary budget. On his face you could read "Entertainment" as plainly as you ever saw it painted on an old-fashioned tavern sign; and to it, after a day of weary rambling over the dusty paths of therapeutic lore, we turned as naturally for refreshment as the tired wayfarer halts before the inviting sign-board waving hospitable welcome to the cheer within.

Genial Dr. Cupps! Like Father Grimes, that good old man, "we'll never see him more." No monument marks his last resting-place. The guild of undertakers, possessed they a spark of gratitude, would not suffer this to be. As for his surviving professional brethren, few of us, I fear, have money to spend in that way.

"How do young doctors, as a rule, get their first start?" queried a cynical-looking M. D. at the foot of the table, with a nose as sharp as the point of his own lancet—"leaving out, of course, exceptional cases, like that of a man swallowing a fish-bone, or dropping suddenly into a fit, where there's no choice but to seek the nearest aid. What I ask is, how do people come to trust their lives *deliberately* in inexperienced hands? What's the philosophy of it?"

"Popular ignorance, probably," suggested one.

"Or cheek in the youngster," another hinted.

"It's mostly *luck*, I think," remarked the chair, whereon had converged a number of inquiring looks.

"Come, doctor, give us your experience on the point," was moved and seconded.

"*Mine* was a case of pure luck," said he.

"Won't you tell us about it?" we entreated.

Dr. Cupps was not the man to refuse.

"Young men nowadays," he began, "enter the profession with other advantages than we old fellows had. The public hospitals, now accessible to students, afford the opportunities to learn much by observation which we were left to find out through experiments upon our own patients.

"Though I took my degree after a creditable examination, I doubt if I could then have distinguished, by inspection, between the incipient stages of chicken-pox and measles. Had I been called to treat a simple case of rheumatism, ten to one I should have found a verdict of white-swelling, and passed a sentence of amputation, without stopping to ask the victim what he had to say against it. My first patient was Percy Topham, a young man who had inherited a splendid constitution, as well as fortune, but was fast making way with both. The case, no doubt, would have fallen into Dingo's hands, for he monopolized the practice thereabout, but for his absence on a distant call.

"'Come quick, sir!' urged the messenger; 'Mr. Percy's taking on at an awful rate.'

"Without staying to inquire further I snatched my hat and sallied forth, quite forgetting, in the excitement, the new pill-bags wherein was stored my stock of samples.

"I arrived to find my patient 'taking on' at an awful rate, sure enough.

"Poker in hand, he was laying about him in a manner highly detrimental to the furniture. He was killing snakes, he said. Had it been dogs, hydrophobia might have been my diagnosis; but snakes, I knew, meant delirium tremens. And such was the decision of Mr. Topham's own more practiced judgment, for, turning toward me in a lucid moment.

"'I've got 'em, Doc,' he said.

"I did my best to calm him, assured him I should bring him round, placed my fingers on his pulse, and began to count the beats, but, darting from me, he exclaimed:

"'There goes the biggest snake yet; the old serpent of all!' making a slash with the poker that caused me to dodge into the corner.

"Leaving two to watch him, and accompanied by the man who had summoned me, I hurried home to procure such remedies as I should conclude the case required—a point, I must confess, I was very far from clear upon. I had been reared in a very temperate community, had seen little of intoxication or its effects, and my reading had not borne specially in that direction.

"Before reaching my office, however, I decided what course to take. There was no time to consult books. Besides, I was ashamed to do that in the presence of the man who waited to carry back the physic. He would have taken it for a confession of ignorance, and would have lost no time in proclaiming me a dunce.

"Overhauling my supply of drugs, and taking a little from every one, I produced a mixture, *some* element of which I hoped might prove of service.

"'Give him a teaspoonful of it every half hour,' I said to the man, handing him the bottle, on which I was careful not to put a label.

"Not caring to be present to witness the effect of my maiden prescription, 'Tell Mr. Topham I'll call in the morning,' I said.

"Whatever my patient did, I passed a bad night. Of all cases in which to make my *debut*, why should the malignant fates send the very one most likely to expose me?

"With many misgivings I presented myself next morning at the patient's door. I was glad to see there was no crape on it. Passing the servant who admitted me, I hurried trembling to the sick-room.

"'Good morning, Doc,' cried the invalid, rising from a sumptuous breakfast, wiping his mouth with one hand and extending the other. 'By George, you did bring me through famously! That stuff was mighty nasty, but it did the business. I'm sound as a dollar this morning.'

"Before I could reply a serving-man entered; the same by whom I had sent the medicine.

"'What's the matter, Dick?' said Topham.

"'Boxer's dead, sir,'

"'Dead! the deuce! There's a go! I suppose you forgot to call at Botts's, the farrier's, for that drench yesterday; just like you when my back is turned.'

"'No, sir!' the man replied; 'I stopped and got it on my way from the doctor's, and gave it according to directions.'

"'Just my luck!' cried Topham, smiting the table. 'You see, Doc, Boxer was my fastest trotter. I counted on winning a mint of money on him at the coming races, and now he's gone and kicked the bucket. Well, "peace to his *manes!*" as the poet says. Here, Dick, hand the doctor that medicine bottle from the mantel. He may as well fill it up again. This morning's luck may set me on a fresh spree, and there's no telling how soon I may need another dose.'

"A glance at the bottle, as I took it, made me start. It bore a label, on which I read, 'Simon Botts, Farrier.'

"'Can it be,' I mentally exclaimed, 'that it was Botts' potion that cured the man and mine that killed the horse?' It was a strong case of circumstantial evidence, at any rate.

"Quietly pocketing the bottle I went my way. If the truth was as I surmised, it never came out. Topham sounded my praises everywhere, and soon the local death-list was pretty equally filled with the names of old Dingo's patients and my own."

Perseverance and Health.—A man who inherits wealth may begin and worry through three-score and ten years without any definite object. In driving, in foreign travel, in hunting and fishing, in club houses and society, he may manage to pass away his time; but he will hardly be happy. It seems to be necessary to health that the powers of a man may be trained upon some subject and steadily held there day after day, year after year, while vitality lasts. There may come a time in old age when the fund of vitality will have sunk so low that he can follow no consecutive labor without such a draft upon his forces that sleep cannot restore them. Then, and not before, he should stop work. But, so long as a man has vitality to spare upon work, it must be used, or it will become a source of grievous, harassing discontent. The man will not know what to do with himself; and when he has reached such a point as that, he is unconsciously digging a grave for himself, and fashioning his own coffin. Life needs a steady channel to run in—regular habits of work and of sleep. It needs a steady, stimulating aim—a tend toward something. An aimless life can never be happy, or, for a long period, healthy. Said a rich lady to a gentleman still laboring beyond his needs: "Don't stop; keep at it." The words that were in her heart were: "If my husband had not stopped, he would be alive to-day." And what she thought was doubtless true. A greater shock can hardly befall a man who has been active than that which he experiences when, having relinquished his pursuits, he finds unused time and unused vitality hanging upon his idle hands and mind. The current of his life is thus thrown into eddies, or settled into a sluggish pool, and he begins to die.

THE NEW YORK QUARANTINE.

Dr. S. O. Vanderpoel's Report for 1879.

Quarantine, Jan. 1, 1880.

The number of foreign ports at which yellow fever prevailed as an epidemic during the past season, together with its fatality in a portion of our own country, called for unusual vigilance on the part of the sanitary authorities. So persistent has been the disease in some of these ports, especially those of Hayti, that until now the arrival of vessels having had the disease during the passage or bringing it to the port has been almost a weekly occurrence. Ninety-five vessels arrived having had yellow fever either at the foreign port, on the passage or in quarantine. Two hundred and fifty-six cases are reported as having occurred on these vessels. Twenty-nine cases of yellow fever were at Quarantine Hospital, of whom eleven died. There were in addition twenty cases of malarial fever, resembling yellow fever so much as to render it injudicious to pass them to the city. Few arrivals of cases of small pox have occurred—seven in all. The medical inspection of emigrants when they go on board the steamer before sailing has almost destroyed this once prolific source of infection. The constant presence, then, of yellow fever at some one of the West India ports causes its yearly recurrence at every port upon our extensive seaboard.

The necessities of commerce occasioned by an increasing steam marine, demand the most active interchange of commodities, and that the interests of the shipper shall be contravened as little as is compatible with the public safety. To accomplish this purpose and enable suspected vessels to return to commerce with the least possible delay, various measures have been proposed, all, of course, having in view the destruction of the infectious element. The fact that this element has so far been intangible, and that all hypotheses for its destruction must rest alone upon its natural history and modes of transmission, render all suggestions more or less experimental. So far as my observation extends, all the proposed methods with which the papers of the day have teemed for some time past, have been advanced by gentlemen whose knowledge of the subject has been mostly hypothetical and who have never been brought in close practical relations with the peculiarities of vessels, their varied construction, and the delicate relations of commerce and trade with any particular locality. The three methods prominently urged, both in the public prints and before legislative bodies, are—first, what is termed the refrigerating process; second, that by superheated steam; and third, that of sealing a vessel and pumping in large quantities of air, so that by a process of oxidation morbid elements should be destroyed. It is not my purpose to discuss the merits of either of the above proposed methods. For the sake of argument I am willing to admit that either might accomplish the purpose proposed, but must contend that, from a sanitary or commercial stand-point, both are impracticable and unnecessary. They are impracticable both on the grounds of time and expense.

I assume that the aim of the promoters of these measures is to facilitate the return of vessels to commerce; and yet, in a por with

the volume of commerce of New York, it would practically create an obstructive quarantine.

In every branch of shipping and commerce time enters as one of the most important factors for success. To delay a steamship for successive trips with its enormous expenditure of maintenance is practically to abolish the line. Now, what would be the working of either of the above systems at this port? During the greater part of the quarantine season there are seldom less than twenty or thirty vessels discharging at the same time under quarantine regulations. The use of either of the proposed methods contemplates special apparatus and trained men to place it in the vessel to be purified. Under the most speedy application, to make the work reliable, this would occupy a time of two or three days, and a further time of two or three days to render effective the destruction of the germs. But a single vessel could be treated at once, so that by the time the daily average could be rendered available for commerce or safe to come to this city the whole season would have passed, a moiety of the vessels having been reached. But even if the time, by constructing a number of freezing hulks, could be lessened, another element quite as obstructive arises, that of expense. The margin of profit arising from a single cargo from the West Indies is relatively small, and the success of the commerce is dependent, in a great measure, upon the extent of the port charges. There is of necessity an additional expense to a vessel discharging in quarantine from what it would be were the vessel allowed to dock. Lighterage, stevedoring, cooperage, watchmen, are all at somewhat higher rates, and, if to these be added an expense inseparable from such means of purification, the aggregate would be so onerous as to cause, in reality, an obstructive quarantine. I have not the data to estimate the precise cost of such proceeding, but it cannot fall short of from two hundred to three hundred dollars for each vessel, while it would require all the means of preliminary cleaning now in use. Methods, therefore, which involve additional delay and expense become as obstructive as if the vessel were subjected to the traditional period of forty days. I have assumed in the remarks thus far that the refrigerating process would in all instances be successful. From quite an extended experience in observing the varied construction of vessels I entertain serious doubts upon the subject.

The frames of vessels vary from eight to twelve inches in depth, separate from each other from one to eighteen inches. Besides the outer sheathing there is also an inner planking of some two or three inches in thickness. Nominally, there are niches cut on the under side of each frame at its most dependent part, which should allow fluids to gravitate from every part to the pump well. In fact, it is the exception to find any provision for limber holes, so that all the filth and fluids which accumulate between the frames through the whole sides of the vessel settles in the most dependent part on either side of the keelson. It is this part of the vessel where the infectious germ most probably accumulates, and consequently the part to which the principal efforts for purification must be directed. Unless the whole of the inside planking were torn up, which is practically impossible, as it is copper bolted through the timbers and outside planking

forming a solid mass, no process of refrigeration could be effected in the timber interspaces. The temperature of the water outside the planking is from 80 to 85 degrees at the season when refrigeration is required, it is within three or four inches of the space to be frozen, while the refrigerating apparatus would be ten or twelve inches. Is it reasonable to suppose that the temperature could be maintained below the freezing point to these spaces in close proximity to a medium of 80 degrees? There certainly could be no certainty as to its efficiency. Admitting, however, that freezing can be thoroughly effected, what certainty have we that it does more than render dormant or torpid the infectious germs? Analogy tells us that many of the forms of organic life are speedily vivified, when, after freezing, they are cautiously exposed to warmer media. Recent experiences would also show that while the cold of a Northern winter will render dormant the infection of a yellow fever vessel the desease will reappear as soon as the vessel passes into a temperature favorable for its propagation. Serious and doubtful in efficiency as would be the contravention from the employment of the above systems there is still the further objection that they are unnecessary.

The measures which prevail at this port, and which I regard as practically sufficient, have been published in No. 19 of the bulletin of the National Board of Health. It is unnecessary to report them here seriatim. In making the above statement I must anticipate what at first sight is a valid objection to the efficiency of these measures. In July of the past summer a bark arrived from Havana with sickness and with a history which plainly pointed to an infected ship. The methods of purification which had up to that time been those wholly relied upon were faithfully applied and when completed pratique was given. Up to that time I had been led to suppose that limber holes were a reality, and that when the pump threw out absolutely clean water the bilge was really clean. I had never up to that time required the limber strakes to be taken up to examine the spaces between the timbers. After the vesse' had been at dock in a very foul locality for ten days a case of yellow fever occurred in the person of the stewardess. The vessel returned to quarantine and a thorough exploration was begun. Apparently all her cabin and hull were as clean as they could be. With difficulty the limber strakes were taken up and masses of filth were found between each frame. After a second purification no other case occurred on the vessel.

So, too, one of the regular Havana steamers, though notably as clean as it was possible to make her in every part, still brought in cases of fever on nearly every voyage. After the above experience the limber strakes were taken up the entire length. Here the limber holes were in the frames two inches from the floor, with more or less filth. After thorough cleaning, cement was put between each frame to the level of the holes. No case of fever has since appeared on the vessel.

No refrigeration or dry steam could insure safety without the thorough preliminary purification upon which I insist. If this is faithfully carried out and the prolonged use of sulphurous acid gas thoroughly effected, it will reach every secret cranny quite as effectively as the more expensive and elaborate methods.

S. O. VANDERPOEL, Health officer of the Port.

NAVAL HYGIENE.

Abstract of Annual Report of P. S. Wales, M.D., Surgeon-General U. S. Navy. 1879.

The health of the officers and men displays no material alteration since the last report, but it is hoped that the active efforts of the Department now being exerted, supplemented by the sincere co-operation of officers of all grades, in improving the sanitation of ships-of-war, will, in the near future, result in such success as to greatly diminish the sick rate.

It was an opprobrium of sanitary science for years that no sufficient and practical plans had been devised to prevent, or even to ameliorate, the terrific suffering of early mariners; and even when science finally furnished correct data for this purpose, the supineness of officials, or the adherence to ancient customs, furnished a barrier to their realization.

The influence of the various causes of disease and death among seamen was, for a long time, not fully appreciated. It was imagined that good food and water were the chief essentials of health on long voyages; that as long as the stomach was catered to efficiently, it mattered little about the quality of the material with which the lungs were fed. This erroneous notion of the importance of abundant wholesome air has cost nations thousands of lives and millions of money. Sanitary science has not labored in vain in later times in teaching the paramount fact that pure air is triune with pure food and pure water in sustaining healthy and vigorous life. The broader mental culture and deeper interest in such studies, now prevalent among officers, have combined greatly to disseminate more correct views of these particulars. The progress of science has brought amelioration of the hardships of human life the world over. The coarse, monotonous food, saturated with salt and hardened by months of stowage, has given way to wholesome viands, fruits and vegetables, which have not only banished scurvy and allied diseases from the list of nautical horrors, but also placed within the reach of the seafarer means of even luxurious living. These are eminent achievements in these directions, and now inquiry is busy to devise better means for ventilation, to vouchsafe more air and light to the denizens of nautical habitations.

The distribution of air is imperfect under the present simple conditions of open hatches and air ports, windsails and ventilating tubes. Frequent efforts have been made to supplement the natural draughts by mechanical contrivances, the primitive form of which consists of a fan inclosed in a suitable box, turned by a crank; a canvas tube connecting the machine with the apartments below decks which are to be ventilated. The chief methods that have been suggested have been tested in one form or another, and all have been found not to fulfill all the desirable conditions of nautical ventilation. Impressed with this fact, the Department, on the 20th March, 1878,

ordered a board, composed of intelligent officers of the different branches of the service, "to examine into and ascertain the best system of ventilation, mechanical or otherwise, by which ships of the navy may be more perfectly ventilated;" the subject was quite thoroughly considered, and the result of their deliberation was the adoption of the system now in use on board the *Richmond*, flag-ship of the Asiatic squadron. The method is based on the aspiration plan, by means of a net-work of tubes reaching every part of the ship and terminating in a large main, through which the currents are drawn by a steam blower, thus changing the entirety of air within the ship; or the current may be reversed and the air drawn into the interior. This latter movement may be utilized in disinfecting by means of chemical substances in a vaporous state, or by superheated steam. The success of this plan is pretty well assured by the favorable reports contained in private letters. The official reports, which embrace atmospheric examinations covering two quarters, are too few to authorize comparison with similar observations made in other ships not provided with the ventilator. The graphic trace herewith appended exhibits a summary of the observations made up to the present time. It may be mentioned, however, in this connection, that the demonstration of the advantages of any system of ventilation by physical observations is surrounded by peculiar difficulties. The dangerous element of air vitiated by overcrowding is the organic exhalations of the lungs and skin, and there exists at present no ready, easy and reliable means of estimating its quantity. It has been assumed that as this organic matter and carbon dioxide are at the same time products of the same vital changes that the amount of the latter in the air may be regarded as a gauge of the former. This assumption would, perhaps, be unobjectionable, were it not the case that grave errors may creep into the calculations by reason of the possible accidental presence of this agent in the air from other than vital sources, or the methods may be lacking in uniformity and exactness.

This important question has been referred to competent officers for thorough examination. I am strongly impressed, however, with the belief that the U. S. S. *Richmond* is a complete success as far as ventilation goes, and this belief is strengthened by the personal testimony of the officers.

This system of ventilation is not expensive when its efficiency is considered; of course it requires a great deal of alteration in a finished ship to locate a sufficient number of pipes in proper position. For instance, its introduction on board the U. S. S. *Richmond* involved an expense of $16,000. That judicious expenditures for improvement of health is true economy, has already been demonstrated in the navy by diminished sick lists, fewer expensive medical surveys and lessened pension roll, as the result of improvement of sanitary surroundings. It would, therefore, be a measure of the highest wisdom to introduce these important reforms into new ships, and into all the old ones when undergoing repairs.

The department wisely decided in the case of the U. S. S. *Richmond* to substitute the large quadrangular ports, fitted with hinged doors, which, at the same time improving the illumination, supplied, when opened, admirable fresh air adits. The influence of a stream of sun-

light upon the physical and mental welfare of the occupants of the hitherto small, damp and dark rooms of our naval ships, will be manifested in improved health, increased cheerfulness, and efficiency. The adoption of the Wilson port in all of our vessels when being repaired is, therefore, recommended as an important sanitary measure.

The forward portion of the ship assigned to the use of the sick and wounded is the worst that could be selected, for it is the place of all others which combines most of the disadvantages of ship life—dampness, motion, least air and light, and most noise. For these reasons it would be far preferable to locate the sick quarters somewhere in the waist of the ship. .

PRECAUTION AGAINST YELLOW FEVER.—The frequent infection of our ships in tropical ports where epidemic diseases, and notably yellow fever, prevail, demands the earnest consideration of the Department. It has happened, in spite of the closest attention to hygienic regulations, that yellow fever has gained a footing among the crews of vessels, and raged with such violence that nothing short of immediate departure for a northern climate sufficed to stamp it out. The vessels have to be laid up for a winter or so in expectation that severe cold will destroy the germs of the disease, but unfortunately there exist grave doubts of this being ever the fact; at least it has not proved successful in certain recent instances, for the return of the vessel to the tropics, as in the cases of the *Plymouth* and *Susquehanna*, was attended with a new outbreak. These and other examples show that disease germs in general, and yellow fever germs in particular, may have their development checked or their activity abated, but are not destroyed by even low temperatures. As far as experimental research on a small scale proves anything, heat is shown to be a far more potent agent of destruction to germ life than cold. The practical difficulties of applying heat on a large scale are doubtless great, but the fact really is that experimentation in this way involves large expense, beyond the means of most private individuals, and, therefore, but little has, up to the present time, been done. The terrific affliction of this country by epidemic diseases, has raised the subject of the investigation of their origin and spread, and the discovery of the best means of counteracting and controlling them, to the importance of national questions to be worked out under Government auspices.

Successful and reliable means of disinfecting ships speedily would be an immense gain both to the navy and to the commercial marine, and would protect communities from the importation of epidemics, which destroy in a few months valuable lives, and cause the loss of vast wealth. For the above stated purpose, the establishment of a station on our northern coast would be desirable, where vessels attacked by infectious disease might resort, the officers and crew transferred to suitable buildings on shore, the sick properly cared for, while the rest of the men could dismantle the vessel and thoroughly cleanse and disinfect her. In this manner, in a few days, the vessel would be ready for service, without any fear being entertained of a recurrence of the disease. While the station would thus be serving the necessities of immediate use, experimentation on the subject of disinfection might be carried on by trained medical officers of the navy, who are so well calculated, by their experience and abilities, for

this work. I am convinced that the valuable information and experience thus obtained, would soon repay the nation for the outlay incurred in establishing the station, and I would, therefore, solicit your active exertions in securing an appropriation for this purpose. I estimate the cost of the ground, the erection of suitable buildings, the purchase of machinery and disinfectants, to be $65,000.

HOSPITALS.—The hospital at Norfolk is being put in good repair, the damage by the hurricane in August last, to buildings and grounds, requiring an expenditure of $3,999. The institution is being furnished with a steam-heating apparatus. The hospital at Annapolis has been abandoned, the building used for quartering the sick within the grounds of the Academy being sufficient. It is recommended that the hospital building be disposed of and the proceeds turned over to the hospital fund. The hospital at Mare Island is in efficient condition, and an urgent recommendation is made for the erection of suitable quarters for the medical staff in the hospital grounds, at a cost of $15,000.

There are forty-one officers and seamen of the navy in the Government hospital for the insane, near Washington.

The balance of hospital fund on hand October 1st, was $66,027.06.

Population of Africa.—Accurate statistics of the population of Africa, and especially of the interior portions of the continent, are, of course, not yet obtainable, and it will probably be many years before several of the populous districts now known will be sufficiently accessible for a thorough census; but much important information has been gathered about the distribution of the inhabitants and the density of the population in the different parts of the country. In the region of the great lakes, for example, there are countries as thickly populated as many of the states of Europe—relatively small areas, which, according to Stanley, possess millions of inhabitants. Behna states that the negro regions are by far the most populous, while the desert parts represent the other extreme. M. A. Rabaud, in a paper published in the "Bulletin of the Marseilles Geographical Society," gives the following as the population of the different subdivisions of the continent: In the Soudan, the population is estimated at 80,000,000, or about fifty-three per square mile; the town of Bida, on the Niger, contains 80,000 inhabitants. The population of East Africa is estimated at 30,000,000, and that of Equatorial Africa at about 40,000,000. One of the latest authorities divides the population as follows among the great families into which ethnologists have separated the peoples: Negroes, 130,000,000; Hamites, 20,000,000; Bantus, 13,000,000; Foolahs, 8,000,000; Nubians, 1,500,000; Hottentots, 50,000. This would give a total population of 172,550,000. These figures are, of course, only approximate, and both German and English geographers think them too low, the former estimating the population at 200,000,000.—*Popular Science Monthly.*

DRINKING WATER ABROAD.

To the Editor of the *Times:*

SIR: Few subjects are more important to travelers than the choice of water for drinking, so painfully illustrated by your correspondent, "A Mourner," in the *Times* of to-day.

For a long time I have let no opportunity pass for calling attention to this fact, and only last summer made it a prominent topic, as some of your readers may have observed, in the pages of the *Nineteenth Century*, stating that "probably our traveling fellow-countrymen owe their attacks of fever more to drinking water contaminated by sewage matter than to the malarious influences which pervade certain districts of Southern Europe."

There is only one rule which can be relied on to insure safety, and, difficult as compliance with it may at first sight appear, it is certainly not so in practice, having been invariably followed by myself in all parts of Europe, during the long autumns I have been in the habit of spending abroad, now for many years. It is simply this—never to drink a single drop of the cold water ordinarily supplied as drink in any place or in any circumstances whatever.

It is quite true that pure water may be obtained in some cities, as in Rome, Vienna, Marseilles and other places; still it is impossible to assert that any specimen served at table is free from admixture with water from an impure source.

What, then, is the traveler to drink, where hot tea and coffee are not admissible? In all large towns and cities in Europe on popular routes, a wholesome table mineral water can be obtained, and it should, if possible, be the product of the country itself. In France nothing is better or more easily procurable than St. Galmier; in all parts of Germany, Selters is to be had on reasonable terms; in Austria, Bohemia, and Hungary, Gieshübel is cheap and accessible, and is excellent. In Russia, selters may be had in the chief cities, and excellent tea abundantly everywhere, at every roadside station. In Italy, at all large and good hotels, either a French or German water may be found; it is, however, desirable, although rarely necessary, to make an early inquiry for it, to insure its appearance at meal time, and to show that its freshness and quality are not matters of indifference. A few years ago I found this quite necessary, but the demand has greatly increased of late, and now there is rarely any difficulty in obtaining a good supply. The price is, of course, higher than north of the Alps, owing to the cost of transport—viz., from 2f. to 3f. a bottle, a price, by the way, often paid for wretched wine, and far less than that constantly given for "claret" by travelers, who thoughtlessly demand in all places their accustomed wine, instead of consuming a better and much cheaper "*vin du pays*," wherever they may be.

Further, it is often forgotten that the "siphon" so common abroad, is by no means necessarily preferable to ordinary water. Made, as

it is, at almost any pharmacy, the bottles are filled at the nearest source, and there is no guarantee that the water is not impure. *On the other hand, the great soda water makers in this country select their water at irreproachable sources. Their products may be regarded as pure and wholesome. I was very glad to meet with English soda water the other day in Constantinople at a franc the bottle.*

Lastly, no addition of wine or spirits to contaminated water counteracts the poison in the slightest degree, all popular theories to the contrary notwithstanding.

But the traveler may find himself in small towns, or in remote places off the common route, where mineral water is out of the question. Here he must insure the boiling of his water before drinking it; and the best way of doing this, as I have found in small Italian towns and in almost all parts of Spain, is to order tea, of which the traveler may with advantage carry a small canister for use in very outlandish spots, if he intends to visit such. The practical way of doing this is to arrange with the manager to supply cold tea in a wine bottle for dinner, and at midday *déjeûner* if desired, at a franc a head.

Stipulate that it should be very weak, that the water must boil, and therefore see it made occasionally at your breakfast table, if you please. I have never found any landlord who was not delighted with my proposal, since nothing pays him better, especially if he has my canister to use from, which I have then invariably found treated with the greatest care and respect. If cold tea is disliked, the object may be attained on the same terms in relation to toast and water, or barley-water, or with an infusion of lemon; although the making of tea is probably more likely than the others to insure boiling water, from the universally recognized need of high temperature to make it.

I can affirm, then, without hesitation, that the ordinary traveler need never run the risk of drinking poisoned water. I may also add here that it is equally unnecessary to drink alcoholic liquor of any kind, even "for the good of the house." A proposal to pay freely for any substitute for it at once assures your host that your abstinence is not the result of a penurious disposition, a fact which he is ready to appreciate. I am bound to say that I have never experienced the slightest want of attention, or failed to receive a warm welcome on a second visit, although during the last ten years, of which a total of more than two has been spent in Continental hotels, I have never consumed any other liquids than tea, coffee, and mineral waters.

I am, Sir, yours, &c.

Wimpole Street, Nov. 22, 1879. HENRY THOMPSON.

(From the London *Times*.)

Apollinaris Water.—This favorite beverage, says the *Druggist's Circular*, is obtained from the Apollinaris Brunnen, a German mineral spring, situated in the valley of the Ahr, not far from Neu-

enahr. According to an analysis made by Professor G. Bischof, of Bonn, it contains in 10,000 parts by weight :

FIXED CONSTITUENTS.

Carbonate of soda	12.57
Chloride of sodium	4.66
Sulphate of soda	3.00
Phosphate "	trace
Salts of potash	trace
Carbonate of magnesia	4.42
" lime	0.59
Oxide of iron and alumina	0.20
Silicic acid	0.08
	25.52

VOLATILE CONSTITUENTS.

Free and semi-combined carbonic acid	27.76
Combined carbonic acid	8.07
	35.83

In the Apollinaris spring there is a high proportion of carbonic acid, especially in the form of carbonates of soda and magnesia ; while the proportion of chloride of sodium is much less than that contained by most other natural waters, and hence its power of quenching thirst is correspondingly greater. The first qualities desired in aërated beverages, namely, a pleasant flavor and a brisk effervescence when mixed with wine and sugar or fruit syrups, are possessed by the Apollinaris water in high degree, and it has therefore met with general approval since its introduction into this country. The artificial mineral waters, especially soda water, have until lately had the advantage of being strongly effervescent by reason of the large amount of carbonic acid which they contained, and were therefore preferred by many to the natural mineral waters. But since the year 1863, the gases which escape from the Apollinaris Brunnen, containing more than 99 per cent. of carbonic acid, have been recondensed into the water by the aid of machinery erected at the spring for the purpose. By this means it has been rendered possible to export it strongly impregnated with its own gases, and hence it has been made to possess not only the characters of a natural mineral water, but also the high proportion of carbonic acid gas belonging to the artificial aërated waters, and thus to combine the advantages of both.

The Apollinaris spring furnishes a regular supply of water, amounting to 6,000 quart bottles per hour, equal to more than 40,000,000 bottles per annum. These bottles and jars are filled and sealed on the spot, as the water issues from the rock, under a pressure of six atmospheres.

FLOUR VERSUS FLESH.

The problem of cheap living for the workingman has been practically settled, for years, in most of the countries of Europe. Its solution was not reasoned out by physiologists and statesmen; stern necessity compelled the laboring classes to subsist on the cheapest food, which, by a coincidence that seems providential, has proved itself to be the best food. But in America it is only of late years that cheap living has become one of the important questions of the day. In years past, when the resources of the country were just being developed, and a ready market existed for labor of every kind, the workingman gave but little attention to the subject of economical living. The stringency of the times for the last few years, however, has led to the discussion of how the laboring classes can live best on the least money. The workingman requires such food as will not only sustain life, but also keep his body in working order and afford the maximum capacity for labor. This sifts the whole problem of cheap living down to two things—the relative amount of nutriment afforded by different edible substances, and the price at which each can be obtained.

It is an opinion generally held that flesh of some kind is essential to the well-being of those whose occupations require physical labor. It is argued that flesh contains nutriment in a highly condensed form and therefore yields the greatest capacity for physical exertion. Nothing could be farther from the truth. Beef contains but 26 per cent. of nutriment; pork and veal 24 per cent.; mutton 30 per cent., and poultry 26 per cent. Thus, only a little over one-fourth of a pound of flesh becomes serviceable to the human organism. On the other hand, bread made from wheat flour contains 90 per cent. of nutritious elements; corn bread, 91 per cent.; barley, 92 per cent., and rye bread, 79 per cent. Meats of all kinds are costly, and yield but a limited capacity for labor, while flour of all kinds is cheap, and nine-tenths of its weight can be utilized in some shape by the body. Notwithstanding these facts, thousands of laborers strain a point to procure beef, at fifteen cents a pound, when an equal quantity of flour, costing from two to five cents, would give over three times the ability to labor; or, in other words, the use of flour instead of meat would effect a saving of about 1,000 per cent.

Whatever may be the fallacies of vegetarianism, or the doctrine of total abstinence from meat, it still remains true that flesh-eating is practiced by all classes in this country to an extent injurious to general health and the pecuniary welfare of the poor. There is nothing in man's constitution which calls for an indulgence in eating flesh; but, on the contrary, there is every indication that man can and should exist without it. Applying to man the rules which hold good in the study of the brute creation, we find from the structure of his teeth that man is a *frugiferous* animal, and consequently, his main source of subsistence should be fruits and grains. It is objected by some, that although the different varieties of grain show a much larger percentage of nutriment than flesh, they cannot furnish some of the elements required to promote the physical powers of endurance. This is pure sophistry; for a glance at the nations of the world shows that the hardiest peoples are those which subsist largely on grains and

vegetables. The Irish peasantry rarely partake of meat, and no one accuses them of physical degeneracy. So with the Scotch, who are one of the hardiest races in the world, and yet meat is by no means their mainstay. The same might be said of most other European nations, among the peasantry of which meat is scarcely tasted from one month's end to another. England consumes an enormously large proportion of meat, the average Englishman eating more than his weight in meat annually, or twice as much as the American and seven times as much as the Spaniard, and it is a well-known fact that there is hardly a nation in Europe where the working class is so poor and wretched as in England. The fact that men crave meat is no proof of its utility to the system. The taste for flesh is largely, if not wholly acquired; and we therefore mistake the cravings of appetite for the demands of nature. The question has another aspect which we cannot enlarge upon, but it will suffice to say, that all meats are difficult of digestion, and impel men to seek artificial stimulants to digestion, such as alcohol; thus further increasing the cost of living to the poor.

No objections whatever can be raised against the use of flour as the principal means of subsistence by the masses. Wheat contains in the smallest space the greatest amount of nutriment, and every element needed for man's physical want is found within the small compass of the wheat berry. Man can subsist indefinitely upon bread alone, and it was a sagacity born of experience as well as of science, that correctly named bread the "staff of life." Vegetable fibrine, or what is called *gluten* in cereals, has been ascertained by scientists to take the same form in the stomachs of men and animals that live on herbs and grasses, that animal fibrine does in the stomachs of flesh-eating animals. This fact conclusively proves, that whatever nutriment flesh contains, is derived originally from grain and vegetables, and the figures above cited show that it is not in so condensed a form nor obtainable so cheaply as in flour. This, then, is the solution of the whole question. The cheapest living that the workingman can obtain is the most effective; and consists in using flour instead of flesh. Despite the present low rates of remuneration for labor, there are few laboring men so poor that they cannot live well if they select their food with reference to its value as nutriment, instead of following the mistaken idea so generally prevalent respecting the strength-giving qualities of flesh.—*American Miller.*

———o———

Minnesota State Board of Health met at Dr. Hand's office in St. Paul early in January: Present, all the members, Dr. D. W. Hand, St. Paul, President; Dr. Charles N. Hewitt, Red Wing, Secretary; Dr. V. Smith, Duluth; Dr. Franklin Staples, Winona; Dr. E. J. Davis, Mankato; Dr. W. H. Leonard, Minneapolis; Dr. Ch. Gronvald, Norway. The Secretary reported the work in the laboratory of the Board for 1879. It has consisted chiefly in the qualitative and quantitative analysis of suspected waters, *i. e.*, of drinking waters suspected to contain poisonous organic matter from sources of filth. The samples examined came from various towns and cities of the State, and some of them were found to be so bad in this respect as to have been directly instrumental in causing typhoid and

other fevers in the families which used them. In this way much assistance has been afforded health officers and physicians in finding and destroying causes of disease. Arrangements have been made for the periodic analysis of samples of the water supply of those towns which have water-works, the object being to assist in guarding against impurities by their speedy detection and description.

The Board has also undertaken a careful study of the well-water supply of towns by an extended series of analysis of waters selected as representative of such supply.

The character of the river supply for drinking and domestic use is also being studied in the same way. The study of the nutritive value of varieties of wheat and of the products of the various modes of manufacture into flour will be begun by the analysis of the grain in the different forms, including bran and shorts. The detection of adulterations in food and drink will constitute a portion of the work in the laboratory for the coming year, the amount of this work being determined chiefly by the articles submitted for opinion.

Dr. Leonard submitted the report on the meteorology of Minnesota for 1879, being the summary of the monthly reports received from eight observers of the board stationed in different parts of the State, and from the United States signal service.

Dr. Staples, from the committee on diphtheria, reported correspondence with three hundred physicians in all parts of the State, in relation to that disease, and submitted a draft of a circular on the prevention and restriction of diphtheria, giving the best means of controlling this dreaded disease.

Drs. Hand and Hewitt, delegates to the recent meeting of the American Public Health Association at Nashville, Tenn., reported very considerable advance in the knowledge of the character and methods of controlling and preventing yellow fever, as the results of the experiences of physicians in dealing with the disease in 1879. Incidental to that study has been an increase of knowledge of other epidemic diseases, from which we, of the North, as of the South, will derive great benefit. The relations of foul water, soil, and air to the causation of epidemic disease are becoming more and more evident, and the sanitary reforms begun in the southern cities bid fair to make them as healthy as any in the North, and even more so if the same measures are not adopted here as there.

The Secretary reported that the study of the influence affecting the health of pupils in the public schools was being made, as last year, by the physical examination of pupils and teachers, and large numbers of teachers have given and are now giving cordial support to the investigation. The proceedings of the State teacher's association, now in session in this city, are further evidence of their interest in sanitary subjects.

The great problems of public sanitation, which it is the duty of this Board to study, are of such vital importance to our whole population that the above brief résumé of its work will be of interest as showing how it is performing the duty confided to it. Seven years of experience and conflict with epidemic diseases, give just ground for the belief that the results of the work for 1880 will be of greater practical value.—*St. Paul's Pioneer Press.*

MENU.

Under this head it is our purpose henceforth—more systematically than hitherto—to give the readers of THE SANITARIAN the benefit of certain good things for the improvement of digestion; not necessarily, at any rate not exclusively, edibles, but these with such spicy accessories and, occasionally, it may be, such extravagancies as will carry their own condemnation, and so contribute to make a contented and happy stomach—one that is willing to wait on appetite. For, as one of our happiest contributors puts it: .... "We eat and drink, and we must be merry."* It promotes digestion.

But whencesoever we obtain our tid-bits, due credit will be given whenever ascertainable, without resort to the common abbreviations by which filchers live on the "*ex*"-"*sel*"-ence of their cotemporaries, without naming them.

The Caterer will be our chief reliance, because of all our exchanges it is fullest of savory things, and the favorite of our family table. And, alas! when we look back on our whilom mess-catering and instinctively feel for the sore place once wont to obtain on the top of our now editorial head where the hair used to grow, as a reminder of the hardness of a sea-biscuit, we earnestly advise the present generation of mess-caterers who would avoid baldness, to take *The Caterer*.†

As for hotels and restaurants—not one of them can afford to be without it; and to all our readers who would patronize hotels and restaurants, which do not take *The Caterer*, we have but a single word of advice, the same as that given by *Punch* to over youthful persons when about to marry: *don't*.

Beef, Roasted.—Cut off most of the flap of a sirloin of beef and trim the joint neatly. Have a clear, brisk fire well built up. Place the joint close to it for the first half hour, then move it further off. Baste frequently. When nearly done sprinkle the joint well over with salt. Put a small quantity of water in the dripping-pan, then pour off the gravy, free it effectually from fat, and pour it over the joint in the dish. Time of roasting, about three hours for a 10 lbs. to 12 lbs. sirloin. Garnish with scraped horseradish and Yorkshire-pudding. Serve horseradish sauce in a tureen. *Yorkshire-pudding*:—Make a thin batter, as for frying, with a pint of milk and some flour; season with salt, pepper, and a little nutmeg grated fine. The batter should be perfectly smooth. Beat up the yolks of four eggs and the whites of two, and strain them into the batter. Beat it well with a fork for some minutes, then pour the mixture, to the thickness of an inch, into a tin buttered freely, and put into the oven. When the pudding is set, lay it in the tin, slanting in front of the fire under the beef which is roasting, and when the top is well browned take the pudding out of the tin, and expose the underside of it to the action of the fire.

---

* May Good Digestion Wait on Appetite! By Richard McSherry, M. D. THE SANITARIAN, vol. iv., p. 193.

† *The Caterer:* 4 s. only (post free). J. G. Smith, Newton & Co., 67 Leadenhall St., E. C., London.

When done, cut it up in diamond-shaped pieces, and garnish the joint with them. *Horseradish Sauce*:—Grate a quantity of horseradish, boil it in sufficient water to give it the consistency of sauce, add a pinch of salt and two or three tablespoonfuls of Tarragon vinegar, then stir in, off the fire, a gill of cream beaten up with the yolk of an egg.—*Caterer.*

Buckwheat as Food.—A French Scientist who has lately been investigating buckwheat, gives the following as the results of his researches: Buckwheat cakes are equal to pure white bread as regards the phosphates or bone-making material and nitrogenous principles which they contain, and are superior to bread in fatty matters. The general yield of buckwheat when cooked is about three times the weight of the flour used, showing that such flour will retain forty to forty-one per cent. of water. Between different batches of ground buckwheat there is a great dissimilarity of composition—one batch containing nearly seven times as much nitrogen, twenty-five times the amount of phosphates, and a hundred and fifteen times as much fatty matter as another. The bran is the richest portion of the buckwheat, but cannot be digested by weak stomachs. The finest qualities of buckwheat flour, and the white mill dust especially, are very suitable for children and persons in health, while the stronger varieties require a strong stomach and much exercise for their perfect digestion.—*American Miller.*

Hot Cakes, to be enjoyable, should be made of Hecker's Self-raising flour, and baked on Serene's soap-stone griddle. This combination contributes to the comfort of the household by a total absence of the stifling, greasy smoke of ordinary griddles, and to extraordinary wholesomeness by the sponginess and lightness of the cakes.

Nutritive Value of Millet.—Johnson says of millet, that its grain is quite equal in nutritive value to the average of English wheats. No one can doubt its value after seeing a field of German millet ripe and ready for the sickle. It contains 9 per cent. of nitrogenous matter, 74 of starch and sugar, 2.6 of fat, with 2.3 of mineral matter.

Bald-Headed Butter.—A writer in the *Independent* illustrates the slow sensibility of an Englishman to a joke. The anecdote is one told of Artemus Ward's visit to England. He had been dined at the Savage Club, and in return invited some of the members to dine with him. Now the great humorist was a poor and a very democratic man, and so chose a rather plain inn for his dinner. The butter brought on the table was not nice. It was, to say the least, suggestive.

"Waiter," said Artemus Ward, "haven't you got some bald-headed butter? Take away this butter, and bring some bald-headed butter."

Nobody smiled, no one thought of laughing. The Englishmen went back to their club-room after leaving their host, and began to discuss the great American humorist. Suddenly one of their number sprang to his feet and began to laugh.

"O, now, I say, did you 'ear him talk about bald-'eaded butter? Why, he wanted butter without 'air in it, you know."

Rather slow are those honest English people to see American jokes; and this is said to be the first laugh that Artemus provoked in England.

An Old Poetical Receipt for Curing Hams.

The best receipt two hams to cure:
With three handfuls of salt, be sure
To scrub them well—but scrub no more
Till two days pass—then as before,
With fresh salt you may scrub again.
When two days longer they have lain
In leaden or in earthen trough,
As chums in pickle, snug enough,
Three ounces of black pepper take,
Three ounces of saltpetre's cake,
Bay salt, three-quarters of a pound,
Which separately rub all round.
Then, wrapt like mummies in cloth case,
Upon them a great weight you place,
For thus the brine squeez'd out, d'ye see,
Shall give them more solidity.
After nine days rubb'd, turned, and press'd,
They'll want another nine days' rest.
(Some folks would turn them ev'ry day,
If so, the brine won't clear away.)
Then from their swaddling clothes release 'em,
Dry-wiped, two days together dress 'em,
With a full pound of treacle-jelly.
When six months hung, they'll please, I tell ye,
So that whoe'er shall cut them then,
Shall wish to "cut and come again." —*Caterer.*

Ham Garnishing and Ornamenting.—The most usual way of garnishing a ham when it is not glazed is to draw off the skin, carefully dredge bread raspings all over the fat, and put the ham before the fire to become brown and crisp. Fasten a frill of white paper round the bone and garnish with parsley or hot vegetables. When served hot at a large dinner it should be glazed, or the rind, while warm, may be carved in any ornamental device. White paper must be placed round the knuckle. Aspic jelly is a favorite garnish for cold ham. If the skin is not ornamented it should be preserved to lay over the ham when it is put aside, as it is useful for keeping in the moisture.—*Caterer.*

The Hungarian Wines advertised in THE SANITARIAN are so highly recommended by many of the most distinguished medical practitioners, for their genuineness and purity, that we take pleasure in calling attention to the advertisement, having satisfied ourselves that they are all that they are represented to be before admitting it to our pages. These wines, we are assured by the proprietor, are not given to the trade, lest they be tampered with. Physicians and others in need of *pure wines* of the best quality, therefore, will find it to their advantage to order them direct from the importer.

Death-rates per 1,000 inhabitants, annually, from all causes; and from causes which are usually preventable. Condensed from report of National Board of Health Bulletin.

Mortality in United States.

	Population.	Total No. of Deaths from all Causes.	Deaths under 5 years	Annual Death-rate per 1,000.	Consumption.	Small-Pox.	Diphtheria and Croup	Scarlatina.	Measles.	Whooping Cough.	Malarial Fevers.	Typh'd & Typhus Fre	Diarrhœal Diseases.	Puerperal Diseases.	Yellow Fever.
Atlanta.—4 weeks ending Jan. 24th	39,000	38	15	11.9	6	..	1	..	..	..	..	..	..	1	..
Baltimore.—4 weeks ending Jan. 24th	400,000	514	186	19.2	90	..	50	27	..	3	..	17	3	3	..
Boston.—4 weeks ending Jan. 24th	375,000	654	361	22.7	121	..	74	6	..	17	..	16	6	7	..
Brooklyn.—4 weeks ending Jan. 24th	564,448	811	375	18.7	87	..	69	17	9	8	10	6	47	19	..
Cambridge.—4 weeks ending Jan. 24th	50,000	73	25	19.	8	..	12	1	..	2	..	..	1	..	..
Charleston.—4 weeks ending Jan. 24th	67,000	121	45	17.6	23	..	5	..	..	2	1	3	5	1	..
Chicago.—4 weeks ending Jan. 24th	537,624	656	332	15.9	65	..	134	43	16	3	3	8	9	8	..
Cincinnati.—4 weeks ending Jan. 24th	280,000	255	128	16.2	52	..	16	22	..	1	..	11	8	..	..
Cleveland.—4 weeks ending Jan. 24th	175,000	220	104	16.3	20	..	22	33	..	3	..	2	4	3	..
Dayton.—4 weeks ending Jan. 24th	39,000	51	15	17.	5	..	10	2	..	..	..	..	..	2	..
District of Columbia.—4 weeks ending Jan. 24th	160,000	411	130	23.8	49	11	3	2	..	3	8	6	5	2	..
Dubuque.—4 weeks ending Jan. 24th	30,000	15	2	6.2	1	..	3	..	..	..	..	..	1	..	..
Erie.—4 weeks ending Jan. 24th	30,000	34	16	14.7	5	..	..	2	..	3	..	..	..	1	..
Evansville.—4 weeks ending Jan. 24th	37,500	50	20	17.3	3	..	4	6	..	..	..	1	3	1	..
Fall River.—4 weeks ending Jan. 24th	48,500	97	48	26.	10	..	4	24	..	..	..	1	..	..	..
Hudson Co., N. J.—4 weeks ending Jan. 24th	199,000	309	122	30.1	42	..	14	13	..	1	2	3	3	1	..
Houston	30,000	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Indianapolis.—4 weeks ending Jan. 24th	97,060	114	46	15.2	10	..	10	11	..	..	4	8	3	3	..
Kansas City.—4 weeks ending Jan. 24th	61,000	47	13	10.	3	..	7	1	..	..	2	1	1	..	..
Lawrence.—4 weeks ending Jan. 24th	40,000	56	22	18.2	12	..	4	..	..	1	..	2	3	2	..
Louisville.—4 weeks ending Jan. 24th	175,000	118	35	10.7	23	..	4	1	..	1	1	4	..	1	..
Lowell.—4 weeks ending Jan. 24th	52,000	71	37	25.7	14	..	6	2	..	1	..	..	..	1	..
Milwaukee.—4 weeks ending Jan. 24th	124,000	146	59	15.3	15	..	17	2	1	1	..	1	2	7	..
Minneapolis.—2 weeks ending Jan. 17th	52,000	31	17	15.5	4	..	2	..	..	1	..	1	..	..	..
Mobile.—4 weeks ending Jan. 24th	40,000	43	11	13.9	7	..	1	..	..	..	..	1	1	..	..
New Haven.—4 weeks ending Jan. 24th	60,000	51	26	13.	12	..	4	1	1	..	1	..	..	..	..
New Orleans.—4 weeks ending Jan. 24th	210,000	373	119	23.1	32	..	4	1	..	9	5	4	22	2	..
New York.—4 weeks ending Jan. 24th	1,097,563	2,068	790	24.5	353	..	109	31	73	27	20	12	28	29	..
Omaha.—4 weeks ending Jan. 24th	30,000	25	10	10.7	4	..	4	..	..	2	..	..	..	..	..
Philadelphia.—4 weeks ending Jan. 24th	901,380	1,155	279	16.6	186	11	60	13	3	7	4	32	15	3	..
Pittsburg.—4 weeks ending Jan. 24th	145,000	248	112	22.5	21	..	44	17	1	9	..	8	5	3	..
Providence.—4 weeks ending Jan. 24th	101,500	174	55	22.7	24	..	8	38	..	..	..	3	..	5	..
Peoria.—4 weeks ending Jan. 24th	40,000	48	16	15.6	5	..	4	7	..	..	2	1	1	2	..
Quincy.—4 weeks ending Jan. 24th	35,000	45	10	16.7	7	..	..	..	..	5	1	6	..	..	..
Reading.—4 weeks ending Jan. 24th	40,109	46	25	14.9	10	..	3	1	..	..	..	1	2	..	..
Richmond.—1 week ending Jan. 24th	80,000	25	13	16.3	5	..	..	..	..	..	..	3	..	..	..
Rochester.—4 weeks ending Jan. 24th	90,000	108	32	15.5	30	..	8	5	2	..	..	1	2	..	..
San Francisco.—1 week ending Jan. 24th	300,000	74	20	12.8	15	..	1	..	1	1	..	2	..	..	..
Savannah.—3 weeks ending Jan. 17th	32,656	52	22	27.2	9	..	1	..	..	..	..	..	3	..	..
St. Louis.—4 weeks ending Jan. 24th	500,000	430	146	11.2	60	..	21	1	4	2	9	9	7	7	..
St. Paul.—3 weeks ending Jan. 17th	51,080	24	12	8.1	1	..	1	..	..	..	..	1	..	..	..
Utica.—3 weeks ending Jan. 17th	35,000	34	10	18.6	6	..	1	..	..	..	1	..	..	..	..
Wheeling.—2 weeks ending Jan. 17th	35,000	24	9	14.3	6	..	3	..	..	..	..	1	..	..	..
Wilmington.—4 weeks ending Jan. 24th	44,013	56	16	14.	15	..	3	4	..	2	..	..	1	..	..

Mortality in Foreign Cities.

Antwerp	169,981	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Buda, Pesth	309,705	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Bucharest	211,380	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Bremen.—1 week ending Jan. 10th	105,000	32	..	14.8	..	..	..	..	..	..	..	..	..	..	..
Brussels	399,482	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Belfast	212,000	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Berlin.—1 week ending Jan. 3d	1,062,500	532	..	26.	..	..	..	..	..	..	..	4	..	..	..
Christiania.—1 week ending Jan. 3d	113,000	50	..	23.1	..	..	..	..	..	..	..	..	..	..	..
Dresden—1 week ending Jan. 3d	215,440	110	..	18.7	..	..	..	..	..	..	..	4	..	..	..
Frankfort.—1 week ending Jan. 10th	120,000	54	..	22.4	..	..	..	..	..	..	..	..	..	..	..
Glasgow.—1 week ending Jan. 10th	578,156	262	..	23.1	..	..	..	..	..	..	..	..	..	..	..
Havana.—1 week ending Jan. 17th	195,437	111	..	29.7	..	2	..	..	..	..	..	3	..	..	2
Leghorn.—1 week ending Jan. 17th	97,410	55	..	29.2	..	1	..	..	..	..	..	..	..	..	..
Leipsic	145,719	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Lyons	342,815	..	..	..	..	..	..	..	..	..	..	..	..	..	..
London.—1 week ending Jan. 10th	3,620,868	1,754	..	25.2	..	8	..	..	..	..	..	22	..	..	..
Liverpool.—1 week ending Jan. 17th	538,338	293	..	28.3	..	..	..	..	..	..	..	3	..	..	..
Leith.—1 week ending Jan. 17th	57,000	24	..	21.5	..	..	..	..	..	..	..	..	..	..	..
Montreal.—1 week ending Jan. 24th	135,000	69	..	26.7	..	8	..	..	..	..	..	1	..	..	..
Paris.—1 week ending Jan. 15th	1,988,806	1,269	..	33.	..	61	..	..	..	..	..	17	..	..	..
Rouen	104,902	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Stockholm.—1 week ending Jan. 3d	169,429	56	..	20.4	..	..	..	..	..	..	..	1	..	..	..
Trieste.—1 week ending Jan. 3d	127,873	99	..	40.2	..	..	..	..	..	..	..	..	..	..	..
Warsaw.—1 week ending Jan. 3d	336,703	169	..	26.2	..	..	..	..	..	..	..	..	..	..	..

Editor's Table.

Quarantine and Marine Hygiene, as presented in the annual reports of Dr. Vanderpoel and Surgeon General Wales, on other pages of this number, will doubtless attract the deserved attention of all quarantine health officers.

Dr. Vanderpoel's report is remarkable for the candid admission that, until last summer, notwithstanding his unusual experience of seven years' service in the New York quarantine, he "had never up to that time required the limber strakes to be taken up to examine the spaces between the timbers "of an infected vessel. His preceding statement, "It is this part of the vessel where the infectious germ most probably accumulates, and to which the principle efforts for purification must be directed," is common knowledge. "The methods of purification which had, up to that time, been those wholly relied upon," seem for the first time, under his observation, to have come into conflict with conditions which proved their inefficiency, leading to the inference that the vessel which was the occasion of his apparently recent discovery, was probably the first one disinfected under his administration. For no one familiar with the construction of a vessel, and the filthy condition of the bilge and limbers, in infected vessels especially, believes in the possibility of cleaning and purification without the exposure of these parts to the disinfectant. Yet Dr. Vanderpoel urges measures which require at least three days preliminary work and other work for an indefinite period, to be followed by additional means, involving detention, which he instituted for the first time in July last, as being abundantly sufficient and less obstructive to commerce than those of which he confesses to have no practical knowledge, but rejects as unnecessary.

That chlorine and sulphurous acid fumes may be so applied as to be effectual ship disinfectants, we have no doubt; but that they ever have been so applied in the New York quarantine, save in the instance of the steamship *Atlanta*, disinfected by Professor Doremus, in 1865, is very questionable.* The usual practice seems at most to have only had the effect of arresting the activity of the poison for a time, without destroying it. The new measures instituted by Dr. Vanderpoel, as described in the paper to which he refers (N. B. of Health Bulletin, No. 19), are also inadequate—the amount of sulphur used for the production of sulphurous acid being too small. It has been proven by experiment that the amount of sulphur necessary to produce sulphurous acid fumes sufficiently concentrated

* The Sanitarian, Vol. VII., p. 308.

to kill low organisms, should not be less than about two pounds for every 1,000 cubic feet of space with dry surfaces. To be effectual in the disinfection of bilge water, and the filthy mud in the bilge and limbers of an infected ship, and to penetrate the rotting wood surroundings saturated with dampness common to these conditions in wooden vessels, it is necessary to bear in mind that one volume of water will take up over thirty volumes of sulphurous acid gas.* Therefore, no less than three pounds of sulphur should be sublimated to every 1,000 cubic feet of space circumscribed by the damp surfaces of an infected ship, and the vapor should be inclosed in the space as tightly as possible for not less than twenty-four hours. Moreover, in the use of this means, pains should be taken to *expose* the infected material to the sulphur fumes. A sufficient amount of dunnage, flooring boards and limber strakes should be removed to allow of the utmost penetration of the acid under the flooring and between the timbers. And, for manifest reasons, the infected filth should be disinfected *before* removal—before the washing and scrubbing; and the cleaned surfaces subsequently, in extreme cases.

Thus applied, we believe in the efficiency of sulphurous acid and chlorine. But we do not believe it involves less trouble, less delay, or less expense than steam, which is more certain in its effects; no infective material having thus far been known to revive after having been certainly exposed for three hours to a degree of heat approximating the temperature of boiling water.†

Theoretically, superheated steam, against which Dr. Vanderpoel contends on economical principles, is by many supposed to be necessary, because certain Tyndall germs are said to be invulnerable at a lower temperature than about 280 degrees. However this may be, evidence is wanting that such germs are infective of any known epidemic. But superheater attachments to ordinary steam-boilers, to be used for disinfecting purposes, add greatly to the facility of using steam, and very little to the cost.

In regard to the effect of refrigeration, our associate, Dr. Corbally, has kindly furnished us with the following:

The *Revue d'Hygiène*, for November last, contains a notice of an article in the August number of THE SANITARIAN on the "Effects of Freezing on Yellow Fever Infection," from which the following is taken: "It is claimed that the chloride of Magnesium favors the pre-

* The burning of ten grams of sulphur for each cubic meter of air-space, tightly closed, was found *not* to kill bacteria, infusoria, or all insects; twenty grams, however, were proved to be sufficient for that purpose. One volume of water, when saturated at 59° F., absorbs thirty-seven volumes of sulphurous acid—enough to kill all the low organisms found in putrid urine.—*Circular from Massachusetts State Board of Health*, 1879.

† Fourth National Sanitary Convention, 1860; Merchants' Magazine, 1863; Transactions Med. Society of N. Y., 1864 and 1868; THE SANITARIAN, Vol. VII, p. 433.

servation of the wood, at the same time that it destroys the foul odors and all appearance of putrid decomposition. The temperature may be reduced to 30 degrees Fahrenheit below 0, that is, to 35 degrees Centigrade, and it is claimed that no living germ can resist this extreme degree of cold. This is precisely what it is necessary to prove, and more especially since very careful experiments tend to throw very serious doubt on the truth of this hypothesis. According to the researches of Frisch, given in the *Revue d'Hygiène*, for February, 1879, liquids in a putrid state have been subjected to a temperature of 87 degrees Centigrade below the freezing point, by means of carbonic acid solidified; yet bacteria have rapidly regained their activity when the liquid was placed under the microscope, and some of this liquid, in the eye of a rabbit, gave rise to an infectious keratitis, just as it had done before it was subjected to the effects of the extreme cold. The cold suspends or benumbs the vitality of these germs, whatever may be their nature; but it seems to be incapable of destroying their vitality, or at least their activity. Why, then, look in the tropics, even under the equator, for a degree of cold which is at least of doubtful efficacy, when it is so easy to find on American steamers an abundance of superheated steam, which can be directed on all parts of the hold or other infected parts? This means of disinfection was long ago pointed out by Dr. A. N. Bell, Chief Editor of THE SANITARIAN; and it was probably a piece of irony on his part, intended to show how useless cold is, in such cases, to publish the *official report* in the case of the *Plymouth*, without any comment whatever."

The *Revue* then details the facts connected with the repair and the sailing of the vessel from Boston, down to the time when she was inspected by surgeons of the navy, and quotes their report regarding the rottenness of the hold, and concludes: "The history of the *Plymouth* has caused much excitement in the United States. Is it not astonishing, in the first place, that a ship yet new (she was launched the 8th of August, 1868, and *considerably repaired* in 1874) should be sufficiently rotten to retain the poison of yellow fever? But especially is it not a proof of the absolute inefficacy of cold as a means of disinfection? If the cold winter, cold even for Boston, the mercury having fallen to 17 degrees Centigrade below zero, could not prevent the yellow fever from breaking out among a crew that had been recently shipped in Boston at the close of winter, while only a few days after her departure, and on the high sea, of what use is it to expend a million (francs) in constructing apparatus for freezing, intended to disinfect ships lying at quarantine?" E. V.

There can be little doubt that these pungent, even caustic lines, are from the able pen of M. E. Vallin, the chief editor of the *Revue* and Professor of Hygiene in the *Naval Medical School of Val-de-Grâce*. The folly of squandering $200,000 on such an ill-considered scheme could not be more severely nor more justly characterized. T. P. C.

Surgeon-General Wales' report shows a just appreciation of the importance of naval hygiene, and the potency of heat as a disinfectant; but is remarkable for ignoring the National Board of Health, which he must have known had already taken initiatory measures for

the establishment of such a national quarantine station as he recommends, excepting that the National Board of Health proposes that it be situated on Ship Island, off the Mississippi coast, where it can be utilized with the greatest convenience to infected vessels, both naval and commercial.

A Bill for the Establishment of a State Board of Health for New York has been introduced into the legislature, which provides for a board of nine persons: The State Engineer, the Attorney-General and the Health Officer of the port of New York are to be *ex-officio* members. The Governor is to "appoint" three Commissioners, two of them graduates of legally-constituted Medical Colleges in this State, and of not less than seven years' practice of their profession. He is also to "designate and appoint" three other persons, one of them a Health Commissioner of New York City, and the others Commissioners of Health of regularly-constituted and organized Boards of Health of cities of the State. No appointment to the State Board of Health shall vacate any office previously held in any local Board of Health. The three "appointed" Commissioners are to hold office for three years. The three "designated" Commissioners may be replaced by the Governor as their local terms expire. The Secretary of the Board alone is to be paid. The members receive actual traveling and other expenses. One of the Commissoners shall be President, and the Secretary must be a person skilled in sanitary service and a member of the Board or otherwise. The sum of $15,000 is appropriated for the Board the first year. The Secretary of the Board is to be Registrar of Vital Statistics for the State.

Memphis, says the *Appeal*, never was as healthy as at this moment, never enjoyed a larger or more lucrative trade, and never had a better prospect. Our sanitary condition is being immensely improved every hour, and our people are confidently predicting a healthy summer and fall trade unexampled in volume and profits.

The New Orleans Auxiliary Sanitary Association continues to hold stirring meetings, and to push surface cleaning, but the work, without which, all else in that city is vanity and vexation of spirit, is to purge *the soil:* Sewerage and drainage cannot be postponed with safety.

The Michigan Sanitary Convention, at Detroit, Jan. 7–8.—We are under obligations to Dr. William Brodie, President of the Convention, for papers containing report of proceedings, from which we purpose to begin a liberal abstract in next number; also to some of the authors of papers for manuscript copy, which will be published in full.

The American Medical Association Committee of Arrangements, we are glad to be informed, is actively engaged in making needful preparations for the forthcoming meeting. While it is the purpose of the Committee that the best of accommodations are provided for the sessions and sections, they would particularly call attention to the by-laws, which require all those who have papers to present to forward abstracts of the same, *in advance*, to the respective Secretaries of the Sections to which they belong: this should be done at latest date, prior to April 25th, otherwise, authors of papers risk the reading by title only, with the additional risk of omission from the published transactions. Moreover, the strict observance of this rule will have the effect of excluding such matters from the sessions and sections as can be better passed upon by the executive officers of the same.

We trust the Committee will, in particular, remember the increased membership of the Section on State Medicine and Public Hygiene, and the inadequacy of the accommodations made for it at the last meeting. Indeed, in New York, at least, there should be no want of room or convenience, and no need of experiment at the risk of subsequent change of place for any of the sections: they should all be right at the outset.

"M.D." has recently become the subject of criticism in school journals, as signifying a degree frequently conferred on persons who have never attained a grade in education equal to the M. G. or C. G. scholarships in public schools—that not more than one-half the M.D.'s are graduates of high schools, and that university honors among the candidates for M.D. are the rarest of accomplishments.

Barnes' Educational Monthly well remarks: "All of this is certainly wrong, very wrong; and no fair, liberal-minded person can be found to defend such a state of things. The professions themselves, in very self-defense, should protect themselves against hordes of vandals who are clamoring for a passport through the gates guarding their sacred precincts .... The motto of medical schools should not be 'How Many?' but 'How Good?'"

The Sanitary Management of Schools is the subject of an excellent essay in the *Trenton Herald*, of December 27th, by H. A. Hopper, M.D., with special reference to the control of infectious diseases, particularly those common to childhood: Scarlet-fever, diphtheria, measles and whooping-cough. He dwells upon the tolerance of the absurd rights claimed by ignorant people, in consequence of which, they are permitted by law to kill their neighbors lest the liberty of the citizen be interfered

with, and urges such compulsory restrictions as will curb ignorance, restrain individual carelessness and indifference to the protection of health and life. If physicians would more frequently make use of the public press for the inculcation of such salutary admonitions, people generally would soon learn enough of such dangers to be co-helpers in the promotion of public health.

Invalids, and all other persons hereabouts, who are supersusceptible to sudden and severe changes of weather, should be wary of February and March—should not allow themselves to be deceived by the mildness of the winter thus far. The bad weather is yet to come, and if they would escape it, they have no time to lose in betaking themselves to more congenial climates. Reference to the advertising pages of this number will show admirable conveniences by the fast Atlantic Coast Line, the Central Railroad of Georgia, New York and Savannah steamships to the Southern States, and the elegant British steamships which ply weekly to the Bermudas and the West Indies; for Europe, by the incomparably elegant and commodious Cunard, Inman and Guion lines; and for parties and continental tourists who would take time by the forelock in order to avoid the annoyances and inconveniences, otherwise common to travelers, Cook's agency is almost indispensable.

Cook's Grand Excursions to Europe.—People who contemplate traveling in Europe will consult their own interests by investigating the Grand Excursions arranged by Messrs. Thomas Cook & Son, of London and New York, for the year 1880. We have before us a handsome pamphlet of 64 pages, just issued by the above firm, giving full details of routes and rates, which include all necessary expenses of traveling from the time the Tourist leaves New York till his return. A handsome Map of Europe shows the routes which Cook's Parties will follow.

Three Grand Excursions will leave New York for Europe during the Spring and Summer. The first is the "Annual May Party," which will leave April 29th. The second is the "Annual Educational Vacation Party," specially arranged for Teachers and Students, and leaving New York July 3d. The third is Cook's "Midsummer Party," which will leave New York July 31st. The last two Excursions give the choice of three routes. Each of these three Grand Excursions will be under the personal supervision of capable and experienced Conductors, and it is announced that there will be no crowding on the steamers, only two persons occupying a stateroom.

Many people have fallen into the error of supposing that to secure the advantages of Cook's system it is necessary to travel in parties

and by arbitrary routes. This is not so. Three-fourths of the enormous business of the firm consists in supplying *single travelers* with International Traveling Tickets by all chief lines of Steamers and Railways to any part of the Globe.

Private Family Parties can secure very favorable terms, with choice of routes and many advantages, by availing themselves of the admirable system which nearly 40 years' experience has enabled this firm to perfect. We have not space for a more extended notice of the interesting pamphlet from which we have culled these facts.

It will be sent *free* by return mail on receipt of stamp for postage. Address Thomas Cook & Son, 261 Broadway, New York.

Retirement of Drs. Bowditch and Farr.—All sanitarians will regret the circumstances which have led to the retirement of these two distinguished sanitary officers—contemporaries in the United States and England.

Dr. Bowditch concisely states the reasons of his resignation in his letter to the Governor, as follows:

BOSTON, January 20th, 1880.

HIS EXCELLENCY, JOHN D. LONG, GOVERNOR OF MASSACHUSETTS.

SIR: I wish respectfully to resign my office of member of the Massachusetts State Board of Health, Lunacy and Charity. I do this with regret; but I feel compelled to do it for the following reasons:

1. It is impossible for me to attend to the duties imposed upon me by the law establishing the Board without neglecting my profession, upon which my family depends for its support. These duties have been more than treble under the new *régime*, and I have been obliged to give up all thought of attending to the greater part of them. I have tried the experiment for six months, and I am unwilling, and it is not right towards the State for me any longer to hold any office, the duties of which I am obliged thus systematically to ignore.

2. I objected very strongly to the union of the Board with any other. I knew that the proper education of our people in sanitary matters would require the full attention of all the seven members of the Board. I felt that nothing but evil would happen to our Board if it should have put upon it such wide and multifarious duties as were performed by the Board of Charities, especially if, superadded to them, should be given the care of the lunatic hospitals and lunacy in Massachusetts. The experience of the last six months more than convinces me that I was right in making that protest. I believe if the present law remains upon the statute book, the public health will not be promoted as it would be were the Board as untramelled as it was up to July, 1879; and as I see no chance at present for any change in that law, I herewith resign my commission as an officer of the Commonwealth.

I remain, with sentiments of high respect,

H. I. BOWDITCH.

The retirement of Dr. Farr is in virtue of the appointment of a new Registrar-General in the person of Sir Brydges Henniker, Bart.,

in the place of Major Graham, resigned. Dr. Farr, who had created and so efficiently filled the post of Superintendent of the Statistical Department of the office for more than forty years, on hearing of Major Graham's intended resignation, became a candidate for the office of Registrar-General. On the result, to his disappointment, he sent in his resignation. It is rumored, says the *Sanitary Record* of July 15th, from which we make this extract, that Dr. Farr's successor will be Dr. Ogle, Medical Officer of Health for the combined Sanitary District of East Hertfordshire. We are glad to learn that it is intimated that the Government recognition of Dr. Farr's services is such that he will be otherwise provided for.

Literature.

The Transactions of the Medical Association of Georgia, 1879, (8vo., pp. 221,) contain four papers relating to public health; three of them on the same subject (yellow fever), and are remarkable for their antitheses. (1) Dr. J. C. LeHardy occupies nearly one-fourth the volume under the heading of *Quarantine, its Sanitary and Political aspect in relation to the Spread of Epidemic Diseases.* He confines himself almost exclusively to yellow fever, sides with those who believe it to be of domestic origin, and opposes quarantine—especially a national quarantine—of which he takes a very narrow view; seems to carry in his mind the most ancient systems, as if modern quarantine meant obstruction of commerce. He, therefore, sustains his views by old examples and old authorities, which furnish no criteria for an increased knowledge of the etiology of epidemics, and their special danger to sea-ports, if permitted to perpetually nidulate in filthy vessels. But in this Dr. LeHardy is very inconsistent, for, while he strenuously *opposes* quarantine, he would have "ships and vessels, from whatever port they may come, and irrespective of the seasons, subjected to *sanitary inspection*, and, when necessary, *sanitation should be enforced*:" this is quarantine of the best kind, and very far from being original with Dr. LeHardy; it is the very kind which those who favor a national quarantine have long advocated, and *the* kind against which Dr. LeHardy contends, because it would have "*central authority—with discriminative powers.*" (2) Dr. J. G. Westmoreland, on the same subject, under the head of *Yellow Fever, its Origin and Relation to other Malarial Fevers*, after stating his belief that it is a merely intensified poison of the miasmatic type, subject to

the same laws in origin and transmissability, proceeds to severely criticise the report of the Sanitary Commission, and to oppose a national quarantine as a useless and deplorable evil, tending to divert the attention of people from rational means of escape by local sanitation. (3) Dr. Henry F. Campbell, on the other hand, under the caption of *The Yellow Fever "Germ" on Coast and Inland—Ship and Railroad Quarantine*, emphatically states his belief in the exotic germ origin of yellow fever, incapable of production in any amount of filth, anywhere; advocates a "strict quarantine," *both* inland and port, "*as strict as that which could possibly be applied to boats, ships and other means of water transportation in ports*," no matter what the degree of obstruction to commerce. "Quarantine with disinfection," he mentions as an alternative of quarantine, but, as Dr. LeHardy, seems to have a very imperfect conception of what an enlightened quarantine means :—a *promoter* of commerce instead of an obstruction. But Dr. Campbell's paper is not wholly devoted to this subject: he makes some very potent remarks upon the STATE BOARD OF HEALTH OF GEORGIA, and very justly criticises the parsimony of the Legislature in virtually abolishing it by witholding appropriations for its support. In this action, at least, he finds reason why the General Government should take action for a coast and national quarantine.

The fourth paper referred to is by Dr. A. W. Calhoun, on *Tobacco Poisoning and its Effects upon the Eyesight*. After referring to *pharyngitis*, "nervousness," and other affections common to tobacco habitues, he cites several cases of amaurosis, which seem to be unmistakably traceable to this cause.

The *Address of the President*, Dr. Jno. T. Johnson, is devoted to the consideration of the poverty of doctors, due chiefly to public imposition and private sponging. Physicians, generally, particularly in the country, habitually yielding to humanity and charity, and trusting to the honor of their patrons, too commonly find neither that nor anything else. The address would make a good professional tract for general distribution.

The *Annual Oration*, by Dr. E. H. Richardson, is on the *Jealousy of Physicians*, wherein he cites many prominent examples of distinction (ancient and modern) which physicians would do well to profit by. The other papers—those of special interest to medical practitioners, are: Uterine Flexions, by Henry F. Campbell, M.D.; Toxic Effects of Bromide of Potassium, Chas. H. Hall, M.D.; Morbid Reflex Excitability, A. W. Griggs, M.D.; Phytolacca decandra as a remedial agent in Mastitis, W. F. Holt, M.D.; Traumatic Tetanus, A. R. Taylor, M.D.; Pelvic Peritonitis, from use of Hodges pessary, H. V. Johnson, M.D.; Malaria Hæmaturia, W. O'Daniel, M.D.; Placenta Previa,

A. A. Smith, M.D.; Resection of shaft of tibia, F. R. Calhoun, M. D.; Report on Surgery, P. H. Wright, M.D.

Routh On Infant Feeding, and Clarke's Manual of Surgery are the concluding volumes of excellent works for the year 1879, comprehended in Wood's Library of Standard Medical Authors.* These volumes, like those of the series which have preceded, have been long enough before the profession to have clearly earned the title of standard works, without note or addition. But the Manual of Surgery would have been incomplete without the important additions of the accomplished American Editor. These are made in brackets, and among them are the antiseptic treatment of wounds, the use of elastic bandages, the plaster-of-Paris jacket, Buck's apparatus for fractures, Bigelow's litholapaxy, and other modern improvements in surgery, which bring the work fully up to time, and constitute it an excellent manual.

Routh's Infant Feeding, is a necessary work to every sanitarian's library. It was first published in 1860—since which time there have been two new editions, 1853 and 1876—and it continues to be a standard authority in statistics of infantile diseases and mortality, showing that one-half, at least, are due to avoidable causes. The chapters on improper food, and in particular, wet nurses and their dangers in this regard, are particularly commendable to all parents and others who are concerned for the well being of infants and the avoidance of vices of constitution, due to diseased nurses.

The Lancet—American Edition—has undergone an important improvement under its new publishers: instead of sixty-four pages as heretofore, leaving out much interesting matter, it now has ninety-six pages or more every month, containing everything relating to medical matters that appears in the London edition, and, it hardly need be added, is, taken altogether, the best medical journal in the world. $5 a year; 50cts. a number. Industrial Publication Co., 14 Dey St., New York.

---

*Infant Feeding and its Influence on Life, or the Causes and Prevention of Infant Mortality. By C. H. F. Routh, M.D., M.R.C.P.L. etc., etc. Third Edition.

A Manual of the Practice of Surgery. By W. Fairlie Clarke, M.A., and M. B. (oxon) F.R.C.S., etc.

Wood's Library of Standard Medical Authors—"$50 worth of books for $12—by subscription only at $12 a year: Subscriptions must be for a complete year; the volumes will not be sold separately."

New York: Wm. Wood & Co.

Transactions of the College of Physicians of Philadelphia,* are gotten up in the usually excellent style in keeping with contents : Spinal Paralysis, by James Tyson, M.D.; Gunshot wound of Abdomen, I. Ewing Mears, M.D.; Medical Missionary Work, W. W. Keen, M.D.; Ulcerative Endocarditis, Jno. M. Keating, M.D.; Accidental Entrance of a Centipede into the Nostril, Jno. H. Packard, M.D.; Meteorology and Epidemics 1877, including notice of increasing frequency of deaths from Cancer, R. A. Cleeman, M.D.; Rapid Post-mortem Emphysema, W. G. Porter, M.D.; An Endemic of Typhoid Fever from Defective Drainage, W. V. Keating, M.D.; Cases of Hepatic Abcess, Louis Starr, M.D., and G. H. Horn, M.D.; Abdominal Tumor, A. Hewson, M.D.; Relation of Sewer Gas to Typhoid Fever, Geo. Hamilton, M.D.; Ununited Fracture of Tibia of Twelve Years' Standing, Preservation of Useful Limb, W. S. Forbes, M.D.; Value of Teale's Method of Forced Dilatation of the Sphincter Vesicæ, A. Hewson, M.D.; Recoveries from Insanity, Isaac Ray, M.D.; Congenital Ventral Gestation, John L. Atlee, M.D., and R. P. Harris.

Dr. Keating's paper is a mournful recitation of mortality at 2216 Spruce St., Philadelphia, common to careless builders and plumbers, illustrated by diagrams, which should be made a criminal offense.

Dr. Hamilton's paper on the Relation of Sewer Gas to Typhoid Fever, purports to show that other causes are more common and should be more diligently sought for, that whatever may be the sins of sewer gas in sewered cities, it cannot be held accountable for even more frequent outbreaks of typhoid fever in country towns and districts. He takes pains too, to except these latter from dungheap poison and contaminated milk and drinking water. But he omits to notice the analogy to sewer gas of barn-yards, pig-pens, hen-coops, banked up cellars never cleansed, rotting wood, (house sills and floors soaked in filthy mud), decayed vegetables, kitchen slops, ancient dish cloths, chamber slops under stale feather beds, old cotton comfortables, calked windows, old walls and foundations saturated with the filth accumulations of the third and forth generations: double distilled "sewer gas." Dr. Cleeman's report on Meteorology and Epidemics enumerates the deaths from typhoid fever in Philadelphia in six years, 1872, '3, '4, '5, '6, and '7, respectively : 341, 358, 468, 400, 774 (Centennial year), 542. This mortality is exceeded only by consumption, 2248, 2228, 2277, 2359, 2676 (Centennial year), 2411; Cholera Infantum : 1603, 1068, 859, 992, 1173, 979 ; Pneumonia : 1252, 1132, 1133, 1277, 1306, 1063 ; Tabes Mesenterica : 779, 679, 721, 766, 811, 786; Cephalitis : 956, 874, 747, 935, 1023, 724 ; Small

* Third Series, Volume the Fourth. 8vo, pp., 250, with illustrations. 1879. Philadelphia : Printed for the College, and for sale by Lindsay & Blakiston.

Pox: 2580, 39, 16, 56, 407, 155; Convulsions: 732, 670, 675, 811, 894, 703; Heart disease: 644, 582, 626, 670, 701, 676. The totals from all causes were: 18,987; 15,224; 15,011; 17,805; 18,892; 16,004. From which may be seen at a glance, the influence of the Centennial on the death rate of Philadelphia from all causes.

America, A Weekly Journal of Modern Progress, is the taking caption of one of the most promising newspaper adventures of the New Year, a thoroughly high-toned commercio-literary paper, and in particular devoted to the promotion of the World's Fair for 1883. Mr. W. H. C. Price, one of the Editors, being the accomplished Secretary of the World's Fair Committee. All persons interested in the progressive steps in the promotion of the great fair of '83, which promises to excel all previous World's Fairs—and who is not?—should take *America*. It is a handsome twelve-page sheet on clear white paper and good type. Published every Saturday, by Price & Co., 13 West Broadway, New York; $2.00 per annum, five cent copy.

Books Received.—Richardson's Ministry of Health, D. Appleton & Co.; Mitchell's Key to Ghostism and Bray's How to Educate the Feelings, S. R. Wells & Co.; Wisconsin State Medical Society Trans.; Answer to New York Neurological Society to Report of Legislative Committee on Lunatic Asylums; Gibbon's Protest against Meddlesome Midwifery; Lincoln's Naso-Pharyngeal Polypi, reprint from *St. Louis Medical and Surgical Journal;* Moore's Hygeo-Therapy —a lecture; Connecticut State Board of Health Report, 1879; Supervising Surgeon-General Marine Hospital Service Report, 1878–9; Wood's Brain-work and Over-work, Prestley Blakiston, Philadelphia.

———o———

OBITUARY.

Dr. William Budd's death is announced, and will be regretted by all sanitarians. His labors in the investigation of the causes of typhoid fever and its prevention, are among the earliest and most enlightened researches on the subject, and have led the way to much subsequent and valuable work in the prevention of all filth diseases.

Rev. Henry Moule's death is announced. Mr. Moule rendered great service to sanitary science by his discovery and application, about 1858, of what is known as the "Dry Earth System." On this subject he published several pamphlets, as also on remedies for the sufferings of the lower classes in England, on the education of the children of the poor and on kindred topics.

THE SANITARIAN.

A MONTHLY MAGAZINE.

Vol. VIII. APRIL, 1880. No. 85.

RAILROADS IN EPIDEMICS.

Simultaneous with the recent meetings of the American Public Health Association, and The National Board of Health at Nashville, there was also a convention of railroad officials, with a view to securing such co-operation between health authorities and railroad officers, as may be most effectual in preventing the spread of epidemic diseases without unnecessary restraints on travel and commerce. At a conference of the representatives of the several bodies, Nov. 18th, J. C. Clark, Esq., General Manager of the Chicago, St. Louis & New Orleans Railroad, was called to the chair, and Randolph Fink, General Manager of the Memphis & Little Rock Railroad, made Secretary.

Chairman Clark stated that the object of the meeting was to see whether they could not have some uniform system of quarantine, by which communities and railroads could be least interrupted during seasons of epidemics. They desired to accomplish this by a cordial co-operation with the National, State and local boards of health, wherever, in fact, the power might be lodged. For the best promotion of the object aimed at, he presented the following memorial as representing his views as to what should be accomplished :

Whereas, The experience of the years 1878 and 1879 has shown that, in times of excitement and great fear, the people living in localities that are or may become subject to infectious or contagious diseases, are rendered unfit to frame rules and regulations and modes for its arrest, prevention and spread, and that the fears of each community induce them to prescribe only such course as may be deemed sufficient for their own individual protection, without reference to, or consideration for, the rights and safety of others, it has become a necessity that the general preservation of the public health be now dele-

gated to some power capable of devising the best plans and modes for its protection; and

Whereas, It is believed that the General Government, which is and should be administered for the common benefit of the whole country, should enact laws, as far as the same can be done, for the conservation of the public health and to promote the material prosperity of the nation, dependent entirely upon inter-State as upon foreign commerce; therefore, be it

Resolved, That the representatives of the several railroads, assembled in convention, do most respectfully petition the Congress of the United States to charge the National Board of Health with the sole power of making and carrying into effect such rules and regulations as to them shall be deemed wise and proper to govern inter-State commerce, affecting the transportation of passengers and merchandise on railroads and on steamboats, or other craft plying on lakes and rivers between and through States or Territories, where any contagious or infectious disease does or may exist.

Resolved, Your petitioners respectfully suggest that, in order to secure promptness and efficiency to prevent the spread of any infectious or contagious disease, the President of the National Board of Health, the Surgeon-General of the United States Army and the President of the State Board of Health, or the members of the National Board of Health from the State where such disease exists, should constitute an executive committee with power to act and put in force quarantine rules and regulations for governing the transportation of passengers and merchandise. It is believed that, by delegating this power to the persons above named, more prompt action can be secured than would otherwise be the case if the whole board of health had to be called together to devise such measures. Sudden emergencies must be met by quick and decisive action; the details necessary to make the system adopted work smoothly and harmoniously can afterward be arranged as circumstances may require.

Where so great a matter as the public health of the country is at stake, no clashing should be allowed between National and State authority. There should be no bickerings, abstract theories or professional courtesies permitted to prejudice by delays such great objects as the public health and the material prosperity of the country, the latter so greatly depending on the former.

Resolved, That wherever said National Board of Health deems it necessary to put such quarantine regulations into force, it shall designate what class of merchandise (if any) may be transported to or from or through such infected place, district, State or Territory, and prescribe all such rules, regulations and provisions under which such transportation may be made.

Resolved, That when said National Board of Health establishes quarantine regulations, it shall designate stations or points upon such railways, rivers and lakes as it shall consider necessary for conducting an effective system of inspection of such passengers or merchandise, and make provision for caring for sick persons, as the interests of the general public health and safety shall require; and the rules and regulations adopted by the authority of the National Board of Health shall be enforced by such agents, officers and servants as may be charged with the sanitary inspection of such stations or points.

Resolved, That when such inspection shall have been made, such passengers, with their personal effects, and such merchandise as may be found entitled to it, shall be furnished with a certificate that shall be their passport to point of destination, and they shall not be detained or prosecuted by any intermediate regulations of any town, city, county or State from passing through the same.

Resolved, That whenever any passenger shall be refused a certificate setting forth that he is free from contagious or infectious disease, such passenger may be detained at such station until his condition shall entitle him to receive a clean bill of health: and he shall not be permitted to proceed beyond such point of inspection until there is a reasonable certainty that such person is not likely to be the vehicle of contagious or infectious disease.

Resolved, That whenever any merchandise in transit from any infected place shall, in the judgment of the inspector of the National Board of Health, be deemed unsafe and likely to convey contagious or infectious disease to any point, such merchandise, on the order of the sanitary inspector, shall be disinfected before it is allowed to proceed.

Resolved, That the Congress of the United States be requested to appropriate such sum or sums of money, annually, as may be necessary to enable the National Board of Health to provide the means for effectively carrying out its provisions in the interest of the public health.

Resolved, That the said National Board of Health shall determine when any place shall be declared infected with contagious or infectious disease, and when such disease has ceased to exist, and shall give public notice of the same.

By the adoption of uniform and intelligent quarantine regulations, public carriers and transporting companies will be enabled to co-operate with and render aid to the National Board of Health in arresting and preventing the spread of any contagious or infectious disease along the routes of highway traversed by such carrying and transporting companies who, in common with the inhabitants along such routes, have a direct interest in promoting the general good health and prosperity of the whole people.

Resolved, Your petitioners most respectfully suggest to your honorable body that they believe it will meet the approval of all good citizens and tax-payers of the United States if the National Government will take the matter of the public health under its fostering care and supervision, and enact such laws and make such appropriations as a careful and honest expenditure of the public treasure will warrant.

Your petitioners believe that, by these means, not only will the public health be protected, but the prosperity of all communities be increased by the assurance given to uninterrupted communication between all parts of a common country under such precautions as the dictates of wisdom and humanity may suggest.

Your petitioners further believe that the great and paramount object to be attained—the public health of the country—can be largely secured under wise laws enacted for this purpose, and that such expenditures as may be involved in making and executing the same will not be a burden seriously felt by the National Treasury.

By your honorable body enacting such laws and providing for their maintenance and efficiency, which we believe will go far toward accomplishing the desired end, your petitioners will ever feel in duty bound to pray.

Maj. Fentress moved that the Chair appoint a committee, composed of railroad men and sanitary gentlemen, to take the matter suggested by the chairman into consideration, and to report at the next meeting. Carried, and Messrs. D. Funiak, Jordon and Fink, and Dr. Johnston, of Mississippi, and Dr. J. D. Plunkett, of Tennessee, were appointed said committee.

On motion of Mr. Jordon, the Chairman was added to the committee.

The meeting then adjourned.

November 20: The Conference resumed. J. C. Clark, Esq., on again taking the chair, stated that they had come together on a purely business matter. The health and prosperity of the people gave prosperity to the railroads. It was, therefore, a vital matter to do everything that would have a tendency to promote the public health. The railroads desired to work in harmony with National, State, municipal and corporate boards of health, and had done so, notwithstanding all the various restrictions which had been placed upon them. During the past epidemic his trains had gone through 49 quarantines within a distance of 550 miles. Now, they desired to see if one quarantine would not suffice for all in cases of epidemic, and thus offer as little obstruction to commerce as possible. They desired to accomplish this, either through the National, State or local boards—wherever, in fact, the power might be lodged.

Col. G. Jordan, Vice-President and General Manager of the Houston & Texas Central Railroad, said the railroads desired to put themselves in line with medical gentlemen, feeling that without their views, without their support, the influence of railroad men would be as nothing in the object to be attained. He had read the able address of Dr. Cabell, and he had observed that there were views that it might be difficult to harmonize, but a perfect harmony in action was certainly desirable.

Mr. Clark said that they desired to get at the question of establishing a quarantine, when necessary, which should be made to protect the public health and at the same time give as little interruption to commerce as possible. He remembered that quarantine restrictions had been placed by local boards on 37 or 38 of the commoner articles of commerce—even upon marble, iron and ice—and in fact, the only article of commerce upon which there were no restrictions was whisky. He desired to know of Dr. Johnston whether the State Board of Health of Mississippi was not practically advisory and without any other power.

Dr. Johnston said that their authority was simply advisory in regard to local boards.

Mr. Clark thought the Government ought to spend $4,000,000, if necessary, for the benefit of public health, and even that would be only one-tenth of one per cent. per capita. It did not concern one State alone that the public health should be maintained, but all the States alike, and it was therefore proper that the Government should

make an expenditure sufficient for sanitary purposes. If even $10,000,000 were needed to secure health, it ought to be used for that purpose. It was as much for the welfare of the country, in this regard, as it was to defend the country against a foreign enemy. He had addressed communications to railroad men in seventeen States, and he had received responses from gentlemen in fifteen of those States, recommending the establishment of a thorough and practical system of quarantine. It was the duty of Congress to make ample provision for the protection of the country from epidemics or anything else that threatened its safety.

Mr. Jordan said that in his State (Texas) the railroads had not experienced a great deal of trouble, as the health officer had generally come to their relief and they had co-operated in measures adopted by him. They desired to get the support of the medical gentlemen in anything that might be adopted for presentation before the State Legislatures or Congress.

Dr. John H. Rauch, of Chicago, said that the railroads had always most cordially extended every facility to him in the performance of his duties, even to having a locomotive in readiness to carry him whither he desired to go.

Mr. Jordan remarked that the railroads had had no trouble with doctors, but with shot-gun quarantines.

Mr. Clark stated that his road had experienced a great deal of difficulty even as between local stations. While some desired merchandise brought to them, others objected to having the freight brought by them. The quarantine regulations were so interchangeable that it was not known what new rule the next hour would bring forth. What was wanted was a uniform system of quarantine.

Major Fentress, General Solicitor for the Chicago, St. Louis and New Orleans Railroad, said that, whatever might be done, the question of quarantine should be entirely removed from politics. He supposed that it mattered but little to the railroads as to who enforced a uniform system of quarantine, so it was done, and the health of the country and commerce were protected. It should not be made a railroad question alone, but a question of the people, of business men, of commerce and of the doctors, the natural guardians of the public health. They wanted harmonious action.

Dr. Pinckney Thompson, President of the Kentucky State Board of Health, thought that a uniform system of quarantine would be reached at an early day, when the people were educated to that point toward which they had progressed a long way during the past summer. State Boards of Health were comparatively in their infancy in the United States, and especially so in the Mississippi Valley. In many instances they were simply advisory. He thought the usefulness of the National Board of Health ought to be increased. He did not see why the States could not control the towns and municipalities along railroads. He believed that, by the intelligent presentation of facts to the Legislatures, a uniform system of quarantine might be brought about, and the powers of Boards of Health enlarged.

Hon. Joseph H. Acklen, member of Congress from Louisiana, said:

The main questions before us for consideration are those arising

out of apparent or actual conflict of State laws and regulations relating to quarantine, and the United States laws governing inter-State and foreign commerce. The 8th section of the 1st article of the Constitution of the United States declares that: "The Congress shall have power to regulate commerce with foreign nations and among the several States and with the Indian tribes." In the great case of Gibbon *vs.* Ogden (9 Wheat.) this commerce is defined as being something more than mere traffic—it is *intercourse*, and like all other powers vested in Congress, is complete in itself, may be exercised to its utmost limit, and acknowledges no limitations other than those prescribed by the Constitution. This commerce among the several States (I will omit that with foreign nations, as not affecting the interests under consideration by this meeting) can mean nothing less than intercourse among said States for the purposes of trade, be the object of that trade what it may, and of necessity must include all the means by which said trade can be carried on, whether by a free navigation of the waters of the several States, or by a passage over land through States where such passage becomes necessary to the commercial intercourse between the States. Wherever "commerce among the States" goes, the power of the nation goes to enforce it. Now, the power to regulate commerce is the power to regulate the instruments of commerce, and it has been properly held that this power extends to commerce on land carried on by railroads, which are parts of lines of inter-State communication, as well as commerce carried on by vessels, and, therefore, railroads may be regulated by Congress as well as steamboats. This power to regulate commerce does not stop at the jurisdiction or limits of the several States. While the National Government possesses no powers but such as have been delegated to it by the States, which retains all but such as they have surrendered, yet, as in the cases which we are to consider as requiring congressional action, it is for Congress to determine when its full powers shall be brought into activity, and as to the regulations and sanctions which shall be provided. Now, inspection laws, quarantine laws, in fact health laws of every description, are competent parts of the powers of a State. The State may further exercise concurrent or independent power in all cases but three:

1. Where the power is lodged exclusively in the Federal Constitution.

2. Where it is given to the United States and prohibited to the States.

3. Where, from the nature and subjects of the power, it must be necessarily exercised by the National Government exclusively.

In some of the cases which we are called upon to consider, there exists concurrent power. The action, therefore, of any State, in so far as quarantine or health laws are concerned, is legal and valid until it shall conflict with some law of Congress. Then such law must yield to the superior power, for it is a well settled principle in such cases, that when Congress has or does act, such law is paramount. But in some other of the cases to be considered, from their very nature, this power must be necessarily exercised by the National Government exclusively.

The word "among" means intermingled with; a thing which is

among others is intermingled with them. Commerce among the States cannot stop at the external boundary line of each State, but may be introduced into the interior. It does not, indeed, comprehend any commerce which is purely internal, between man and man, in a single State, or between different parts of the same State, or not extending to or affecting other States. Commerce among the States is that commerce which affects more States than one. The internal commerce of a State is that commerce which may properly be considered as reserved to the State itself. Let us now glance at the principles upon which this power of regulation rests, in order to determine definitely whether it is within or without the operative effects of the Constitution. Looking alone to the common law, from which spring those rights which the Constitution protects, we find that when private property is affected with a public interest it ceases to be *juris privati* only. It seems clothed with a public interest when used in a manner to make it of public consequence and affect the community at large. Thus, when a railroad which was operated solely within a State by a corporation is attached to one going out of the State, it must properly come under the same law that controls this latter for the common good to the extent of the interest thus created. Now, beyond all question the transportation of freight or of the subjects of commerce for the purposes of sale or exchange, is the constituent of commerce itself. This can never be doubted, and must have been the prominent idea in the minds of our forefathers when they framed the Constitution. The thing they desired was to prevent embarrassing restrictions by any State on the transportation of such articles, and so we find this power to regulate given to the General Government in the same clause which conferred the right to regulate commerce with foreign nations.

Dr. R. W. Mitchell, of Memphis, a member of the National Board of Health, expressed entire satisfaction with the manner in which the railroads had co-operated with the health authorities.

General Manager Fred de Funiak, of the Louisville & Nashville & Great Southern Railroad, said that his line had worked in harmony with both the National and State Boards of Health. His road had not lost more than one-half the amount during the epidemic of 1879, under the supervision of the health authorities, that had been lost the year previous, when the sanitary system was less perfect. He thought that, with a still further improvement of the system, the losses of railroads and communities, on account of epidemics, could be reduced to a minimum.

Rudolph Fink, General Manager of the Memphis & Little Rock Railroad, said that in Arkansas they were not as favorably situated as they should be. The very moment it was ascertained that a case of yellow fever had occurred in Memphis, an order was issued prohibiting any more trains from leaving the quarantine limits of Little Rock. Every local board enforced this rule until they got out of supplies, when they asked whether they could not have a train. A train would run into Memphis for a week, until the local stations were supplied, and then they would co-operate with Little Rock in the quarantine again. They could not have any legislation on this subject for a year to come. When the Legislature met it would be called upon to pass

a law establishing a sort of uniformity in quarantine in connection with other State Boards and the National Board of Health, under such a system as to give people confidence in any quarantine that might be regularly established.

Hon. Joseph H. Acklen desired to know whether, if the quarantine were worked exclusively by the National Board, it would not insure more confidence.

Mr. Fink thought they would have no more trouble if they could have such an arrangement.

Mr. Acklen asked whether shot-gun quarantines would not be abandoned under Government laws.

Mr. Fink thought there would be none whatever, nor any trouble. He believed the people would obey any necessary protective laws.

D. W. C. Rowland, General Superintendent of the Louisville & Nashville & Great Southern Railroad, said that during the year 1878 trains on his road ran into Memphis regularly. No restrictions were placed upon the lines except as to local towns. They had 140 of their employes taken down with fever, of whom seventy odd died. The company lost $350,000 by the fever of last year. The first employes stricken down were a conductor and an engineer. They were sent to Paris and placed in the company's hotel, and the Division Superintendent was instructed to prepare it for the use of employes who took the fever. They had determined to care for such employes, and, at the same time, supply the suffering people of Memphis. As soon as the people of Paris found the hotel building was to be put to the use named, they telegraphed him that if it was done they would burn the house. He sent a message to Supt. Montgomery to select the best section houses for the use of sick employes, but the people along the line threatened to burn them down. He attempted to establish a tent hospital, but the people would not allow it. He had, at last, to make arrangements with the yellow fever hospital at Louisville, to which he hauled the sick employes, in a special hospital car, 250 or 300 miles. A locomotive was kept fired up to haul this train at any moment. At Milan they would not let a train man go two feet away from the track. Quarantine regulations changed every hour. He had never experienced such a time in all his twenty-five years of railroad experience. Supt. Rowland then read a report to General Manager De Funiak descriptive of quarantine experiences in 1879.

Dr. Billings, of the National Board of Health, said the Board had come to Nashville for the purpose of gathering information. He desired to speak personally, and as a sanitarian, and not as a member of the National Board, as to the policy to be pursued. The question was a business matter, a matter of dollars and cents. When the people could be got to realize this fact they would take care of their health, if for no other reason. The enforcement of sanitary measures must largely depend on State Boards of Health, and every aid and encouragement ought to be given to these boards, together with all the reasonable power and means for carrying out what they decided was necessary to be done. It would not be sufficient that Congress had power to regulate inter-State commerce and quarantine laws for general protection; not sufficient to prevent the errors which had been so graphically depicted, because they had to deal with railroads

running across the States, because many of the railroads began in Tennessee. The State Board of Health of Tennessee ought to have the power to do away with those evils. They would have to educate the people to the importance of the necessity of protecting the public health. They would have to learn by actual experience that it was possible to keep up communication with an infected city and run no risk of spreading disease. As soon as that became known no longer would there be any shot-gun quarantine. It would only be necessary that a reasonable system of quarantine be kept up in order to bring about and maintain confidence. The National Board of Health would hold an open session Saturday, to which he cordially invited them, and to participate in any discussion that might arise. One thing was necessary to the establishment of efficient quarantine: the Executive Committee of the National Board of Health should be empowered to act at once upon the receipt of information concerning an epidemic, instead of having to wait for the meeting of eleven members of the Board from as many different States. The National Board had had no difficulty or difference with any State Board of Health. If it could be done, the laws should be made less oppressive than they are now. If they wanted to get legislation from Congress to aid in quarantine matters, they must ask that alone. They should couple with it the idea that all the diseases of America which had prevailed in epidemic form, should be investigated, and all the preventive measures known adopted for the extinction of the disease. He thought great results would be accomplished through the Havana Commission, and that the $10,000 appropriated to that purpose would be well spent. New York city, perhaps, felt that she could take care of herself. She had spent $1,500,000 to complete her quarantine, and there was not such another quarantine on the coast, certainly none south of Philadelphia. The great object of the National Board of Health, so far as yellow fever was concerned, was to remove any necessity for quarantine. Engineers would be sent to Memphis next week to survey that city, and ascertain what could be done to better its condition.

Sanitation, Dr. Billings said, must finally rest upon the intelligence of the people. There was not a time during the summer when the Tennessee State Board and the National Board could not have stopped the epidemic at Memphis within twenty days, by the total depopulation of that city, had that course been made possible. State Boards of Health should have police powers and regulations, the National Board acting as a centre around which the State Boards could act in harmony, securing uniformity and harmonious aid and the education of the people, the United States providing funds to maintain quarantines whenever necessary, expended through State Boards of Health, until the people themselves should establish boards of health and make other preparations to take care of themselves in their own way. They should have live members in their boards of health, and they should commence the work of sanitation immediately. They would all make mistakes. None were omniscient. All knew more than they did last spring. But the work of sanitation should go on.

General Superintendent J. W. Thomas, of the Nashville, Chattanooga and St. Louis Railway, said the line he represented ran, for

the most part, through Tennessee, some of it, however, being in Kentucky, Alabama and Georgia. He had experienced comparatively little trouble in regard to quarantine. In no case had trains been prevented from passing through villages or towns. He thought that for his line the State Board would be most effective, and that in other States similar organizations would insure protection. He did not think it would be advisable to petition Congress for legislation; and, if Congress were petitioned, it should be done either through the State Boards of Health or Legislatures. The same power which protected the rights of the humblest citizens, should give protection to the railroads. Instead of fighting local quarantines, the best plan was to work kindly with the people, and restrictions would soon be removed or modified. The information on the subject of quarantine obtained in 1879, would have a great deal to do with modifying quarantine regulations hereafter. He expressed his entire confidence in the ability of the State Board of Health working in conjunction with the National Board of Health. He would much prefer resting the matter with the different State Boards, believing that they would protect all alike.

The matter was then referred to the Committee previously appointed.

Three sets of resolutions were presented. The question most discussed was whether they should petition Congress to enact such measures as would bring about a more effective and satisfactory system of quarantine, or depend upon the State Boards of Health and Legislatures. The balance of opinion inclined decidedly to the latter course. The following preamble and resolution were finally adopted:

Whereas, The great benefits realized by the action of the National and State Boards of Health during the present year, made it manifest that with the increasing experience of sanitarians in measures calculated to prevent the generation and spread of infectious and contagious diseases, and in the educated public opinion, which is beginning to realize that the surest protection is in encouraging and sustaining such boards, we have reason to hope that the day is not far distant, when such a system of sanitation and quarantine will be perfected and enforced, as shall prevent entirely the introduction or spread of such diseases, without material injury to the business interests of the country; and

Whereas, As shown by the experience of the past two years, the chief trouble to common carriers is the great number of local quarantines, and the want of harmony and uniformity in their several regulations; therefore, be it

Resolved, That a committee be appointed, to consist of one representative from each State Board of Health, and one from each common carrier company in this Convention, whose duty shall be, by petition or memorial, to bring to the Legislatures of the States, the practical defects of the present system of quarantine, in order that a more effective system may be adopted and enforced by appropriate legislation, and to ask through the various State Legislatures an appropriation from Congress for the enforcement of State quarantines, to be expended under the approval of the National Board of Health.

The convention of railroad men and sanitarians was then called

together again, and the preamble and resolution were adopted without a dissenting voice.

Secretary Rudolph Fink was requested to furnish a copy to the National Board of Health, which meets to-morrow.

The chairman was requested to give general notification of the action taken by the Convention, and was empowered to call it together at such time as he might deem necessary.

The Convention then adjourned *sine die*.

———o———

The following example illustrates the restrictions on commerce and travel, imposed by the authorities of numerous places in the south and south-west in 1878 and '9, under the name of "Shotgun quarantine." The implication—"As required by the rules of the National Board of Health"—was a gratuitous imposition, wholly inconsistent with any rules the National Board ever recommended.

Hinds County Quarantine Regulations as to Freight.—JACKSON, MISS., AUGUST 16, 1879. At a conference this day, between the Board of Supervisors and the Board of Health of Hinds County, it was agreed that the following list of articles will be admitted into Hinds County, without detention, provided they shall have changed cars, and been disinfected at the National Quarantine Station, as required by the rules of the National Board of Health :

Flour,
Meal, Salt,
Bacon, unpacked,
Pork, in barrels,
Lard, Fish,
Liquor,
Molasses,
Sugar, in bbls, except crushed,
Sewing Machines, unpacked,
Marble Goods, not packed,
Lead, in bar,
Doors, Blinds, Sash, unpacked,
Carbolic Acid,
All Kinds Fluids,
Demijohns,
Cans, Jugs,
Lime, Cement,
Nails, Ties,
Machinery,
Hardware, not packed,
Grindstones,
Lumber, Brick,
Powder in kegs, not packed,
Farming Implements, not packed,
Soda, in barrels or kegs,
Soap, unwrapped,
Tobacco, chewing, in boxes,
Wagons, K. D., not broken,
Lemons, unwrapped, in open boxes,
Ice, in open car,
Coal, car load,
White Lead,
Paints, mixed in oil, not packed,
Iron, R. R.

☞ *All Third-class Mail Matter is Excluded.*

FARRAR MORRISON,
President Board Supervisors of Hinds County.
R. L. BOGLE, M.D.,
President County Board of Health.

CONTAMINATION OF DRINKING WATER BY FILTRATION OF ORGANIC MATTER THROUGH THE SOIL.*

By Victor C. Vaughan, M.D., Ph.D., Lecturer on Medical Chemistry in the University of Michigan, assisted by P. E. Nagle.

There seems to be a wide-spread belief that in disposing of decomposing organic matter it is only necessary to remove it from sight by burial in the earth. All through the rural districts and in the towns and many small cities of this country privy vaults, cess-pools and even cemeteries are located in close proximity to cisterns and wells. A few feet, or at most a few rods of intervening soil are considered as sufficient to prevent the contamination of the water from these receptacles of decomposing matter. There is a general belief in the power of the soil to retain or to remove in some way all organic matter from solutions. Not infrequently a privy vault may be seen located within 10 or 20 feet of a well or a cistern, and often the slope of the land is toward the well or cistern. During the past three months the authorities of a growing village in the interior of this State have, in spite of the remonstrance of certain citizens, located a cemetery within a few rods of a deep well, the water of which is used for household purposes.

During the summer of 1878, the sanitary condition of certain premises in Ann Arbor was as follows: The cistern located at the rear of the house was about 20 feet deep, and about six feet below the surface it leaked. Of course if water could pass out it could as readily pass in. Fifteen feet back in the yard, and slightly elevated, stood the privy. As soon as the warm months of summer came on, the water of the cistern became so offensive that it could not be used. The odor was that of the privy, and the water swarmed with microscopic animalculæ, and with others large enough to be seen with the unaided eye. All the water was removed and the cistern thoroughly cleansed. A few days later a heavy rain refilled the cistern, but within a few weeks more the water again became unfit for use, but was not so bad as it had been before the cleaning. During the remainder of the summer and fall the family obtained their drinking water from another source. During the winter season the water of the cistern so improved that after being filtered it could be used. But as soon as the warm weather of the following summer approached the water again became unfit for use, and was almost or quite as bad as it had been during the previous summer. This is only an illustrative case, and I know of similar ones in Ann Arbor.

Such instances as this caused us to doubt the power of soils of completely preventing the filtration of organic matter in solution. We determined to endeavor to answer, by experimental investigation, the following questions: (1.) To what extent are organic substances removed from solution by filtration through soil? (2.) Do different soils differ in their capability of thus removing organic matter? It must be noted here that the organic substances to be removed are held in solution, and not merely in suspension. The principal object in the fil-

* Read before the Sanitary Convention at Detroit, Jan. 7, 1880.

tration of natural waters for the supply of towns and cities is the removal of suspended matter. Again, the waters with which our experiments are concerned, and with which, as we shall endeavor to prove, drinking water is often contaminated, should be designated as *polluted* water, *i. e.*, the amount of injurious substances which they contain is sufficiently great to render their direct use dangerous.

The first thing necessary to an investigation of the first question, was to select some soluble organic substance, for which there are known exact methods of quantitative determination; for it would be necessary to determine the amount removed from solution by making quantitative determinations of the amounts in solutions before and after filtration. For this purpose urea was selected, and, in order to have the conditions as natural as possible, the solution selected for filtration was urine. Urea is also easily discomposed, and experiments performed with this substance would have the advantage of the conditions being most favorable for the removal of the organic substance. It is well-known that urea is not far removed from inorganic matter and that its transformation into carbonic acid and ammonium is easily accomplished.

One cubic foot of the ordinary gravel soil, from four feet below the surface, was obtained and so arranged that fluids could be poured upon its surface (which was one foot square) and the filtrate collected. The amount of urea in a specimen of urine was then estimated with mercuric nitrate (the chlorides having previously been removed), a measured quantity of this specimen was poured upon the surface of the soil, and the urine which passed through was collected, measured and its contained urea estimated. A certain amount of urine (which was equal to that passed by one person in 24 hours) was poured upon the soil at one time. The filtrate from this was collected, measured and its contained urea estimated. This was repeated for a number of days or until the filtrate was found to contain as much urea per 100 c. c., as the urine did before filtration. The results of these experiments are given in the following table:

	Urine Poured on Soil.	Urine Passed Through.	Total Urea Poured on in Solution	Total Urea in the Filtrate.	Urea per 100 c.c. before Filtration	Urea per 100 c.c. after Filtration
			Grammes	Grams.	Grams.	Grams.
First day	1,760 c.c.	938 c.c.	49.28	15.00	3.8	1.6
Second day	965 c.c.	740 c.c.	25.7	14.06	2.6	1.9
Third day	860 c.c.	600 c.c.	13.76	9.60	1.6	1.6
	3,585 c.c.	2,278 c.c.	88.13	38.66		

The soil, which had now become saturated with organic matter, was removed from the filter, spread out upon a clean board so as to be exposed to the air, left in this condition for 24 hours, and then returned to the filter. Urine was poured upon this soil, and the amount of urea removed by filtration was estimated as before. In this case it was found that the urine, before filtration, contained 2.1 grams of urea per 100 c. c., and after filtration, only 1.6 grams; or the soil which had been saturated with the organic matter was so far purified by exposure to the atmosphere for 24 hours that it now removed one

half a gramme of urea from every 2.1 grammes poured upon it in solution.

From these experiments is is very evident that the ordinary gravel, which constitutes so large a proportion of the soil of this State, has but little effect in removing or oxidizing soluble nitrogenous substances from solutions which are allowed to pass through such soils. Furthermore, it became evident that such soil soon becomes saturated, and then no longer has any effect upon the removal or oxidation of these organic substances. The amount of urea necessary to thus saturate one cubic foot of soil was 88.13 grammes, or that contained in 3,585 c. c. of urine. Of course this urine contained a small quantity of other organic substances, so that we shall not claim that the following computations are exact; but we will be careful not to overstate them. Suppose that the total solid excretions of an adult are 112 grammes per day (this of course is very low), then the solid excretions from a family of six persons each day would be sufficient, when properly dissolved, to saturate over seven cubic feet of gravel soil. From this it is evident that only a few weeks or months would suffice, with a proper amount of rain fall, to saturate every cubic foot of soil to the depth of five or ten feet in a small yard, in which we often find privy vault, cess-pool and cistern or well in close proximity. Of course if these substances are not destroyed by filtration, they will be carried with the water which passes through the soil wherever such water may go. If the water gains an entrance to the well it will carry with it the substances in solution. At this rate it would require more than a few feet or even rods of intervening soil to prevent the contamination of the water of wells or leaky cisterns from privy vaults, which often are not cleaned once a year, or from cess-pools or cemeteries.

But there is another consideration that must be mentioned in this connection. The gravel by itself forms one of the poorest of filters, because the particles are not all of the same size and shape, consequently the interspaces are also of unequal size, and the liquid, meeting with less resistance in one direction than in others, soon collects and forms streamlets which may convey the polluted water in quantity toward, or even into the source of the water used for household purposes.

This brings us to a consideration of the second question proposed to be investigated by experimental investigation, *i. e.*, Do different soils differ in their capability of removing organic matter from solution? The gravel having been already tried we did not make any further experiments with it; but we next experimented with sand and loam in the same manner as we had done with the gravel. The comparative results only will be of interest. While urine (3,585 c. c.) containing 88.13 grammes of urea saturated one cubic foot of gravel, urine (4,000 c. c.) containing 89 grammes of urea did not saturate one cubic foot of loam, but, after this amount of urine had been used, the loam still removed four-tenths of a gramme of urea from each 100 c. c. of urine. The sand was also better than the gravel but was not as good as the loam, for 88 grammes of urea in 4,000 c. c. of urine did not saturate the sand, which still removed two-tenths of a gramme of urea from each 100 c. c. of urine. Thus of the three—gravel, sand

and loam—the loam is most active, and the gravel least active in the removal of organic matter from solution.

The explanation of this may be conceived to be as follows: First, the inequality in size and variety in the shape of the pieces of gravel (as has already been referred to) allows the formation of streamlets, and the solution thus passes through the gravel more rapidly than through either the sand or loam. This is a physical defect in the gravel as an agent for the removal of the organic matter. A second cause is the greater porosity of the loam. As was shown by the renewed activity of the gravel after it had been exposed to the atmosphere for 24 hours, oxygen is the agent which acts chemically in the destruction of organic matter, or, rather, in its conversion into inorganic matter. Now the more concentrated the oxygen the more energetically will it act. As is well known, the atmosphere in the minute pores of the soil is condensed.

Oxygen has justly been termed the scavenger of creation, and the free access of this gas is necessary in order to render the excretions of animals harmless. This good work is begun in the living body; for the hæmoglobine of the red blood corpuscles carries oxygen to all the tissues, and by the action of this oxygen, poisons introduced from without and poisons generated within the organism are rendered inert and fitted for excretion.

Animals are formed by the agency of plants out of the constituents of earth and air. "Whatever in our bodies is inorganic originated in the soil; whatever in our bodies is organic originated in the atmosphere. Whatever in our bodies is inorganic will return to the soil; whatever in our bodies is organic will return to the atmosphere. The carbon of the carbonic acid of the air becomes the carbon of the cellulose, starch, gums, resins, etc., of plants; it becomes the carbon of our blood and muscle; and from our bodies it is returned to the air. Thus the changes of matter form an endless chain whose first link is also its last." (Gorup-Besanez.) Now the agent which converts the organic tissues of the animal into inorganic substances is oxygen; and this is the proper agent to use in rendering animal excretions harmless. This is the reason why the dry earth closet, with a pipe to conduct the gases into a chimney, is the best method (at least for the rural districts and small cities and villages) of disposing of fæcal matter. The dry earth takes up the oxygen, which is then condensed in the pores and acts with double energy. Instead of burying these substances down in the earth where but a limited supply of oxygen can reach them, it is far better to allow the free access of the atmosphere. Burial simply aids in the preservation of organic substances, and, as we have seen, they may be carried under the ground into our wells and thus poison us. Instead of simply burying these noxious substances and then thinking ourselves secure from them, it would be far better to render them inert and even useful, as may be done.

As to the location of cemeteries in the vicinity of wells, we think that our experiments show that the decomposing matter from one body would be sufficient to pass a long distance, especially through gravel soil, before it would be completely destroyed. We honor the dead as highly as others do, but it is not right that the dead should be allowed to murder the living.

THE MICHIGAN SANITARY CONVENTION.

Detroit, January 7-8th, 1880. Abstract of Proceedings, from the Detroit *Free Press*.

The Convention met under the auspices of the State Board of Health, in St. Andrew's Hall, Detroit, January 7th, and was called to order by DR. WILLIAM BRODIE, one of the Vice-Presidents.

The Rev. C. T. Allen offered prayer, and Prof. R. C. Kedzie, of Lansing, President of the State Board of Health, welcomed the delegates to the Convention, and spoke briefly as to the desirability of holding a sanitary convention, the benefits to be derived from which he did not doubt would be eminently practical.

DR. BRODIE'S ADDRESS.

The formal welcoming address was then read by Dr. Wm. Brodie, of Detroit, in part, as follows:

It is to me a subject of deep regret that official duties in the civil department of our system of government prevents the Hon. H. P. Baldwin, who has been selected to preside over this Convention, from addressing you on this occasion. I regret it the more as it was unexpected, and the time given me too short to do proper justice either to you, or myself, or the interests of this Convention. The State of Michigan feeling deeply interested in the health and longevity of her citizens, by legislative enactment organized a State Board of Health in the year 1873, whose proceedings, up to this time, have been placed before the people of the State and generally disseminated throughout the Union.

The great demand that has been made for these proceedings, and the great interest the public have manifested in sanitary science, suggested to this Board, that, could a closer relation be brought about with the people and themselves, a much greater good would be attained, and a general interest excited that would be of value, not only to the citizens of the State, but the Board itself. Hence, upon due consideration, it was decided to hold a series of sanitary conventions —the first at Detroit at this time, and the second in Grand Rapids some time later.

We have met to-day to inaugurate the first meeting, the Board trusting it may be the harbinger of many future ones.

For ages past investigations have been conducted chiefly by the members of the medical profession under the head of "*Causes of Disease*," which, although not originally germane to their calling in a mercantile point of view, nevertheless, laying aside the question of profit and loss, they have entered upon the yet higher sphere of *prevention of disease* and the prolongation of life thereby.

The way being thus opened by the medical profession, and the intelligence of the present generation having been thus directed to their own welfare, others have arisen to aid in the prevention of disease and its corrolary prolongation of life.

Boards of health were first organized in cities, State boards by

special enactments in many of the States, and the general government, by Congressional law, has organized a National Board of Health.

In our own State governmental interest has extended even to the townships, and provision made by law that all causes of death shall be reported to the State Board of Health.

The field is large and the reapers are as yet few. To augment the numbers of the reapers is one of the objects of this Convention. The State Board of Health have, therefore, presented for your consideration certain subjects and selected gentlemen to open the discussion. There is one subject not in the programme, now agitating the people of England and Germany, and which has been introduced into our country, which appears to me to be a retrograde one, viz.: *Anti-vaccination*, and seems to be gaining strength by appeals made to the prejudices of the more ignorant classes, and aided by circumstances which sometimes have the appearance of truth.

There is another evil which is detrimental to the public health, and which should be remedied, viz.: the location of slaughter-houses within the limits of a city or large village.

In our own city are private slaughtering houses in its settled portions, and although the solid materials are carted away, yet the animal fluids and washings are allowed to enter the sewers, there to decompose, and the poisonous effluvia, in spite of the traps, arise and mix with the air we daily breathe.

Many are the sources of disease known to the physician that are remediable. There is material enough to fully occupy your time, and if the people can be only aroused to a sense of their own safety, the objects of this Convention will be in a measure accomplished, and prove the harbinger of others in the future.

Another object in the holding of this Convention was to give an opportunity for the manufacturers of sanitary appliances, specialties or machinery to bring them forward for general examination. You will find that some manufacturers have accepted the invitation.

CONTAMINATION OF DRINKING WATER.

Dr. V. C. Vaughan, of Ann Arbor, read a paper on "Contamination of Drinking Water by Infiltration of Organic Matter through the Soil." (Printed in full on other pages.)

Dr. Kedzie remarked at the conclusion of Dr. Vaughan's paper: "I believe that we are drinking a cold infusion of death."

Dr. Yemans expressed his thanks for the paper, which he regarded as a remarkable result of original investigation.

CATTLE DISEASES.

Alex. J. Murray, V. S., of Detroit, read a paper on "Contagious Diseases among Cattle." The efforts which are made to sell the carcasses of animals for food, which have suffered from disease, are attended with great injury to the public. The most formidable and fatal disease to which cattle are subject in this country is known as the Texas cattle disease, or Spanish fever. The home of this disease was on the plains of Texas, but the demand for cattle had extended the disease far beyond those regions. Texas cattle are sold cheaply,

and it followed that they were conveyed to places where cattle were scarce and higher.

Dr. Murray gave a very complete synopsis of the appearance of diseased animals at post-mortem. The flesh of the animal has a darker appearance than natural, and decomposes very rapidly after death. It is obvious that the flesh of animals suffering from such disease is unfit for human food; but, for some years past, it has been the practice in Detroit to kill animals as soon as it was discovered that they were suffering from the disease, for the purpose of selling them to the public. The best way of putting a stop to such practices is to prevent the introduction of the disease, which is brought here by Texan cattle. An Act was passed by the Legislature in 1869 to prevent the introduction of Texan cattle between the 1st of March and the 1st of November; but as no means have been provided for carrying the law into operation, it is practically disregarded.

It is impossible to state exactly the number of animals which are lost by this disease; but it is probable that not less than 400 head of cattle are annually lost in Detroit and its vicinity through this disease. Estimating each animal at $40 a head, an annual loss of $16,000 is represented. It is, therefore, very desirable, both on economic and sanitary grounds, that an amendment should be made to the existing law, to prevent the great loss which cattle owners annually suffer from this scourge, and at the same time to prevent the sale of diseased meat, which must have a very injurious effect on public health.

Dr. Murray's paper evoked a running fire of questions and answers with reference to the several stages of the Texas cattle disease, the cause of its contagion and various other points, which showed that the Convention was alive to the importance of the subject.

Dr. Kedzie moved that it be declared to be the sense of the Convention that the Governor at once appoint a commission (in accordanee with the Act on that subject) to prevent the spread of the disease in Michigan. The motion was carried, and Dr. Kedzie was requested to write out a memorial to the Governor.

Chairman Brodie announced the following committees:

On Water Closets and Baths—Dr. Vaughan, of Ann Arbor; Dr. Hartsuff, U. S. A., Fort Wayne; Leroy Parker, of Flint.

On Odorless Excavators—Dr. Wheeler, of Hillsdale; John Hosmer, of Detroit; Dr. Baker, of Lansing.

On Cooking Utensils—Dr. R. C. Kedzie, Lansing; Dr. Snow, Dearborn; Mrs. F. E. Dingman, Detroit.

"METHODS OF STUDY IN SANITARY SCIENCE."

This is the title of a paper read by the Secretary, for the author, Dr. J. S. Caulkins, of Thornville. His central thought was that in the study of methods for preventing infectious diseases, statistics are the corner-stone—the fundamental principle of success or intelligent investigation. He advised all to record such facts concerning disease as came in their way, and in this manner each do his individual little toward the cause of sanitary science and the prevention of disease.

Chairman Brodie announced that Supt. Nicholson, of the Detroit House of Correction, had sent in an invitation to the Convention to visit his institution, with special reference to the system of ventilation that

obtains there. Dr. Stockwell, of Port Huron; Dr. Russell, of Detroit; Rev. D. C. Jacokes, of Pontiac; Dr. Ranney, of Lansing, and Henry W. Lord, of Detroit, were appointed a committee to visit the prison.

LIGHT IN THE PUBLIC SCHOOLS, AND SCHOOL LIFE IN RELATION TO VISION.

By J. C. Lundy, M.D., of Detroit.

When we consider in how many instances eye disease of an incurable character owes its origin to school life, we cannot avoid the conclusion that modern education is not an unmixed blessing. When we observe the array of brilliant names, whose possessors have done so much for the advancement of ophthalmic science, we may question whether the ounce of prevention has not sometimes been lost sight of in the eagerness to perform some dazzling cure.

Conclusions based upon the examination of many thousand children show beyond doubt that modern school life, with its surrounding circumstances, is an important factor in producing serious and permanent changes in the eye, and consequent limitation of vision. Nor are these the only ill effects of school life with bad hygienic surroundings, for the eye may suffer, though less seriously, in various other ways. Considered as optical instruments, few eyes are perfect, and yet in a majority of cases the defect is so slight that emmetrophia (or natural sight) is found in most young children. Three forms of optical defect are found among children, viz.: Hyperopia (far sight), myopia (near sight) and astigmatism. The far-sighted eye is one whose axis is too short, in consequence of which it becomes necessary, even for distant vision, to bring into play a part of the accommodative power of the eye through contraction of the ciliary muscle. Now, if distant objects are not seen distinctly unless by an effort of accommodation, it will require a strain upon the ciliary muscle, and also upon the internal recti muscles, to enable the far-sighted eye to properly focus the image of near objects; and the nearer the object is brought the more divergent will be the rays of light proceeding from it and the greater will be the strain required to focus these rays upon the retina. If the light is deficient, or if it comes from a wrong direction, so that the shadow of the body falls upon the object (a book for example), it must of necessity be brought close to the eyes. Although the pupil is often unable to explain why he sees better if the object is brought within short range, yet he knows from experience that such is the case. The amount of light reflected from any given surface varies inversely as the square of the distance of the object, and hence if a book is held eight inches distant it reflects more than twice as much light upon the eye as if held twelve inches distant. Thus it will be seen that bringing the book close to the eyes is, in one respect, equivalent to increasing the amount of light. Aside from this, the size of the retinal image is increased if the object is brought nearer, and although the strain is greater, we frequently see far-sighted pupils bring the book close to the eyes. The result of this strain, which is intensified proportionally as the light is poor, is the exhaustion of nervous and muscular energy, in consequence of which the letters first begin to "blur," then "run together," and finally they can no longer be distinguished. After a few

moments' rest the work is resumed only to be again interrupted by the same tired feeling, the same blurring of the letters, and the pupil often becomes disheartened and discouraged, and votes school a humbug and study a bore. Nor is this the only trouble arising in such cases, for if the optical defect, the insufficient light and other bad influences are not remedied, congestions and inflammations very soon make their appearance, and any persistent effort to use the eyes only adds to the distress.

Even the emmetropic (or natural) eye does not escape the ill effects of over-use, bad and insufficient light, with poor ventilation, etc.; and although the discomfort is trival when compared with that experienced by the far-sighted individual, yet it is only one of degree, while many emmetropic eyes become myopic or near-sighted, as numerous statistics will show.

But it is in near-sightedness with its attendant evils that the worst results of school life are to be seen, although they are by no means alarming in this country when we compare them with the existing state of affairs in Germany. From the examination of more than 25,000 school children and students, both in this country and Europe, it has been shown that near-sightedness increases to a very great extent during school life.

Near-sightedness may be either inherited or acquired, and the causes may be classed as predisposing and exciting. Very few, if any, children are near-sighted at birth, but there can be no doubt that a predisposition to short sight is, in many instances, inherited. That certain physical conditions of the visual organs and certain tendencies to disease of these organs are inherited, are facts well known to every oculist. Dr. Loring, in examining school children in New York, found in the same schools and under the same circumstances that twenty-four per cent. of the German pupils were near-sighted, while amongst the Americans there were nineteen per cent. and amongst the Irish pupils only fourteen per cent. Chief among the exciting causes are close application to study at an early age, bad and insufficient light, tension of the eyes for near objects, prolonged use of the eyes without rest, congestion of the head, face and eyes from the stooping position, from tight clothing or from cold feet, badly printed books, the use of pale ink in writing, bad ventilation of school and living rooms, want of sufficient exercise in the open air, residence in large cities, and other influences which have a debilitating effect on the system in general.

To me it would seem that modern school life, especially in our large cities, furnishes most, if not all of these causes, and we might correctly say that improperly constructed and insufficiently and poorly lighted school buildings, too young attendance at school and an imperfect system of education, are the principal causes of near-sightedness, both in this country and in Europe.

My own investigations upon the subject of short-sightedness among school children includes the examination of about 500 pupils. Over 400 of these were in attendance at the High School, where the course of studies is very thorough, and the others included both divisions of the lowest grade in one of the district schools. In the first division of the lowest grade were pupils who had been in attendance at school nearly four months, and who ranged from 6 to 7

years of age. In the second division were pupils who had about completed the first year at school, and whose ages ranged from 7 to 8 years. No near-sightedness was found among the pupils of this grade. Of the pupils examined in the High School the percentage of near-sightedness in each class was: Ninth grade, 9; tenth grade, 10; eleventh grade, 10; twelfth grade, 12. These examinations would tend to show that near-sightedness does not prevail to a great extent among the pupils in the schools of Detroit, and that it increases from 0 in the first grade to 12 per cent. in the highest during the twelve years' course—that is, at the rate of 1 per cent. yearly.

While this is a very favorable showing when compared with the statistics of other American cities, and while it is remarkably so when compared with the condition in the schools of Germany, yet it behooves us to use every precaution lest matters grow worse, which they certainly will as our city becomes more of a metropolis, unless we correct several existing defects in our school buildings and in the manner in which the school rooms are lighted.

Dr. Lundy mentioned the curious fact that near-sightedness is the result of a close study, education, etc.; that it is not found among the people of uncultivated countries, and that in cultivated England it prevails only to a slight extent. In regard to the infrequency of near-sightedness among the English, he said: "I think it is susceptible of the following explanation: The English are fond of out-door sports, and these healthful exercises, keeping up the physical tone and vigor of the system, help to counteract the ill effect of school life. Then their books are well printed in good ink and with excellent type—matters of great importance." Erisman noted that of the 4,358 pupils examined by him, all studied two hours out of school—some studied four hours, some six, and others more than six hours. Of those who studied two hours, seventeen per cent. were near-sighted; of those who studied four hours, twenty-nine per cent., and of those who studied six hours or over, more than forty per cent. were myopic.

Now, if the light is deficient, or if it comes from such a direction that the shadow of the pupil's body falls upon the book or paper, he invariably brings it near, that the eye may receive more light, as was explained in a preceding paragraph. Under such circumstances, the pupil usually bends over, and, as the stooping position prevents a free return of the blood from the head, face and eyes, it favors the congestion of the eye, already referred to. This congestion, often repeated and long continued, finally leads to certain pathological changes in the tunics of the eye, and, as a result, the near-sightedness becomes progressive. These changes once begun tend to increase, particularly during youth and adolescence, and, in rare instances, they terminate in detachment of the retina from the choroid, and total blindness of the victim.

Now, what can be done to correct the ill effect which school life exerts upon the visual organs? From what I have observed in our own city, where we are free from many of the injurious influences of larger places, where our schools will compare favorably with any in the land, and where the proportion of near-sighted pupils is comparatively small, I am convinced that much can be done, and that many existing defects need correction.

In most instances I observed that the light was insufficient. In some cases the light came from the back and fell directly in the face of the teacher, and the shadow of the pupil's body covered the book or paper. In a few instances a portion of the light came from the front, and was a source of annoyance, as well as of injury, to the pupil. In some very wide rooms light came from only one side, or from one side and the rear, in consequence of which the extreme right was insufficiently lighted. In every room which I entered, blackboards were placed between the windows, and, in order to see these boards, the pupils were obliged to put themselves in a strained, uncomfortable position, while the light from the window on either side of the blackboard came directly into the eyes. In most cases the lintels of the windows were too far from the ceiling, in some instances being about five feet below. In numerous instances the windows were too near the floor, and the light which fell below the desk was mostly lost.

The surface of window space rarely exceeded ten per cent. of the floor surface, while in many instances it was not greater than six per cent., and in some it was even less than six per cent.

With two or three exceptions, the methods of ventilation were not the most approved, and, in many instances, the windows seemed to be the only means through which any ventilation could be secured.

I shall now attempt to answer the question, "What can be done to correct the ill effect which school life exerts upon the visual organs?" In regard to light in the school rooms, it should come from a proper direction; it should be abundant in quantity, and it should be pretty equally distributed to all parts of the room, the lighting being from both sides of the room. Light coming from the rear or from the front is objectionable. Light from above has certain objections, because the pupils who sit in front have a portion of it shut out by the shadow of their bodies, while the light falls more or less in the face of other pupils who sit at the rear end of the room. Those most familiar with the subject hold that the surface of window should be equal to thirty or fifty per cent. of the surface of the floor. My own opinion is that much will depend upon the surroundings. In schools situated on broad streets, with no other high buildings in the immediate vicinity, and in a pure atmosphere (conditions prevailing very generally in Detroit), a window surface equal to thirty per cent. of the surface of the floor room will be usually sufficient. In a smoky, foggy atmosphere, where high buildings are nearer than a distance equal to twice their height, or where the school building is located in narrow, dingy streets, the window space should be greater than thirty per cent. of the surface of the floor.

The school rooms should be oblong, the windows should be high, should come close to the ceiling, and should be square at the top, for the most important part of the light comes from the top of the window. If shades are necessary to shut out a portion of the glaring light, they should be arranged so that they can be rolled from the bottom rather than from the top.

Javal favors placing the windows on the east side of the building, with the long axis of the building nearly north and south. This plan affords the advantage of the soft, mellow light of the eastern sky and

sufficient sunshine, with its healthful influence, while the sun at midday does not shine directly into the room. Many prefer the diffuse light of the northern sky, which has no irritating effects upon the eye, and which is so pleasing to the artist; but unless the the window surface is quite large, all parts of the room will not be sufficiently lighted, and the healthful influences of sunlight are lost.

Schools should be situated on spacious lots, and should be separated from all other buildings a distance equal to twice the height of the highest building in the vicinity.

The walls of the school room should not be a glazed white, and neither should they be very dark, for in such cases too much of the light is absorbed. A faint neutral tint will be found most grateful to the eye, particularly the greenish or gray tint. The school room should be thoroughly ventilated, for an impure atmosphere, in addition to its irritating effect upon the visual organs, induces a feeble condition of the system and a laxity of tissue, and, in this way, acts as an indirect cause of near-sightedness.

What has been said in regard to light, ventilation, etc., in schools, applies with equal, if not greater force to the homes of the pupils; for there can be no doubt that to the school is often laid the blame for injuries done at home. Since near-sightedness, which is the worst result of long hours of study, generally occurs before the age of 20, and since comparatively few cases have their origin after the 18th year, the necessity for shortening the hours of study in early school life is apparent. In most American books an inferior quality of ink is used, and the letters are not as clear as those found in most English publications. The size of the type should not be less than one-sixteenth of an inch, or about the size of long primer. A faintly tinted yellow paper will be more agreeable to the eye than a glazed white, for the latter reflects so many rays of light that it is apt to prove irritating to the retina. Pale writing ink should never be used. Spectacles should never be fitted for children except by persons thoroughly competent, and particularly is this so in cases of myopia; for if an improper glass is given, the near-sightedness may be increased, and serious injury may be done the eye, as I have seen in more than one instance. I recapitulate:

1. Lessen the hours of study and shorten the sessions of study for pupils under 15 years of age.

2. Provide an abundance of light—from the left side if the room is quite narrow—from both sides if the room is wide; but do not allow the sunlight to fall directly on the book or paper.

3. Ventilate the school rooms thoroughly and in accordance with the most approved methods.

4. The pupil should sit erect, and should hold the book at least twelve inches distant.

5. Pupils should avoid whatever causes a congestion of the head, face and eyes, such as tight clothing, cold feet, the stooping position, etc.

6. Pupils should not study during recovery from illness, or when suffering great bodily fatigue.

7. Text books and readers should be printed in good ink and with clear, bold type, a little larger than one-sixteenth of an inch.

8. Pupils should avoid everything which has a debilitating effect upon the general system.

9. Exercise in the open air should be taken freely, and every precaution should be used to keep the bodily vigor unimpaired, something which is too often neglected. An education is dearly purchased whose price is a shattered constitution and a ruined eyesight.

Supt. Sill, of the public schools, said the paper was of special interest to him, but he would not undertake to discuss it at present.

Dr. Eugene Smith said Dr. Lundy was too sparing of his adjectives in characterizing the inexcusable outrage of placing blackboards between windows in school rooms. The people could not be too thankful to Dr. Lundy for his admirable paper. He suggested that blackboards always be placed on easels, so that they may be moved when the light demands it. The present desks are all wrong in height, breadth of seat and angle of the desk part proper, and pupils should be seated with reference to the light and their relative perfection of vision.

Dr. Kenzie asked Dr. Lundy his opinion of the practice of night study by lamp-light.

Dr. Lundy replied that the practice was extremely hurtful.

Dr. Ranney asked if any percentage of near-sightedness among German students is attributable to the character of the German types.

"Undoubtedly," was the reply.

The Convention passed a unanimous vote of thanks to Dr. Lundy.

The Chair announced that Ex-Gov. Bagley was present, whereupon there was a call for him. He came forward and congratulated the Convention on having so well begun the work that had called them together. He regarded the men who think for the common good the saints of the future, and he hoped to see some of them canonized. It seems to be settled that ninety per cent. of us demand that the other ten per cent. shall think for us. Mr. Bagley was glad that the thinking was of such a practical and valuable character.

PULMONARY CONSUMPTION.

Dr. Henry F. Lyster read a paper entitled "The Prevention of Pulmonary Consumption." Premising that the various theories regarding the disease, the minute anatomy and finer subdivisions could not be discussed in the time allowed him, the Doctor said that we would accept the fact that pulmonary consumption was a disease characterized by wasting of the body, accompanied by a cough and expectoration, and in a large proportion of cases progressing to a fatal termination, an examination after death showing evidences in the lungs of changes resulting from inflammation. There can be no subject of greater interest than the prevention or limitation of that disease which, by its almost universal prevalence, results in an estimated mortality of from ten to thirty per cent. of death from all causes.

Consumption presents itself to us in such a variety of shapes, and concealed beneath such effective disguises, that in many instances we are completely deceived, and only awaken too late to be able to disarm the relentless foe who has made his way unchallenged into the inmost courts of the citadel of life. We find it associated with the brilliant intellect of the precocious boy, lighting the fire in his eye and the flush upon his cheek, while chiseling away insidiously the

full, round limbs, until at last the hand, stretched out to receive the laurel crown from his competitors in the intellectual race, is too weak to place it upon his brow, and before the leaves have faded in the wreath he has been numbered among the great multitude of those who have fallen before their sun had reached the zenith of their day. How frequently do we find the tendency to this disease betrayed by that dash of struma which gives to woman a type of beauty little less than angelic?

After thus introducing his subject Dr. Lyster proceeded to review some of the causes of consumption, and quoting the statement that one-seventh to one-fifth of all deaths are the result of this disease.

The paper presented a formidable array of statistics and mortality reports.

The weight of medical opinion inclines to confirm a belief in the contagiousness of phthisis. There are few practitioners of long experience who cannot recall cases coming under their own observation where the disease was induced by contagion from long and intimate association between a consumptive and a person previously free from any form of this disease.

Many cases of undoubted contagion were cited by the Doctor, and one of a lady in his own practice, who died of acute phthisis within two years after the death of her husband, whom she attended through a long illness from consumption. None of the lady's family, before or since, have ever been affected by consumption.

Much has been done toward the limitation of all other forms of disease, and from the universality of consumption, its transmission by inheritance, by contagion, and its influence in affecting all other diseases, it is a necessity that we strive by every and all means in our power to limit the disease if that be possible. The study of this subject shows us that we have a number of important and reliable means to vastly lessen it. The children of consumptive parents are the great company from which the vast majority of consumptive children come. They inherit the seeds of the disease, and only await the advent of exciting causes for the germination and full development of the destroyer. These causes are met with at every hand—cold, exposure, overwork, mental and physical, depressing influences of every kind, the ordinary diseases of childhood, lack of proper food, clothing, etc., and unfitting occupation or employment. As a primary step there should be no intermarriage between or with consumptives. Could this admitted step be carried out, the most effective step for the limitation of the disease would have been taken. Let the circumstances which determine marriage, affection, interest, propinquity, be tempered with a knowledge of its entailment.

Dr. McCarmac, of London, has published his views in relation to air rebreathed, and believes that tubercle is usually induced by a want of fresh air. Very many cases of consumption undoubtedly arise from this cause, and the desirability of providing the best means of ventiliation for dwellings, school-houses, manufactories and public halls cannot be too urgently insisted on.

The relation of soil moisture and phthisis has been observed by many searchers after the causes of consumption. The effect of climate on the human body, as defined by sanitarians, is the sum of the influences which are connected with the solar agencies, the soil, the

air or the water of a place. Temperature has been definitely proved to have nothing in common with consumption. Certain localities in all countries have obtained a reputation for exemption from pulmonary disease, also as curative for those invalids coming to them, which, upon close examination, they have only, at best, partially maintained. In cold countries we are apt to meet the catarrhal and more chronic forms, and in tropical climates the febrile and more rapid cases.

In concluding, Dr. Lyster condemned the physician who, to shirk responsibility, sent the poor consumptive away to other climes to die among strangers, and advised all care and attention to proper clothing, proper food, freedom from exposure and the utmost confidence between the patient and physician. He particularly appealed to intelligent sanitarians to not shut out the fresh air from the consumptive's home, and to awaken the public to the already known preventives of the development of this insidious disease.

(*To be Continued.*)

Mild Winter as Influencing the Coming Summer.—So many questions have been asked and so many opinions expressed, by many persons, concerning our prospective sanitary condition during the summer of 1880, because of the prolonged moderate weather of the present winter, that it may be well to reflect over some facts, and some false conclusions incident to hastily formed views, and see whether we have any real reason for anxiety for this season beyond others, and whether any real causes of disorder are likely to arise, not incident to seasons generally, or growing out of influences not within our own control.

Unreflecting people argue in this wise: First. A cold winter kills all the vegetation and makes a succeeding summer healthy. Second. A warm winter fails to kill all (or so much of) the vegetation, and makes the succeeding summer unhealthy

Now the real fact is that when the cold weather kills the vegetation so extensively, there is more dead vegetation; and if the mere *quantity* of *dead vegetation* controlled the ratio of its disease-producing influence, then the summer following an extremely cold winter ought to excel in unhealthiness.

For the opposite reason, the mild winter, leaving a large proportion of the vegetation in a condition of life instead of death, ought to be followed by a healthy summer.

Neither of these conditions, however, are the real factors governing our climatic sanitation, but *cleanliness and dryness* govern the whole. Thus, for instance, in our own city of Savannah, proper sanitary government in the city itself and proper drainage of the adjacent low grounds, not allowing moist or stagnant or putrid accumulations or surfaces, will insure our general good health, whether a summer succeeds a moderate or a cold winter, the moisture, putridity and consequent poisonous evaporative capacity being the elements of its dangerous nature, and these elements being removable at our own will, by proper hygienic treatment.—L. A. Falligant, M.D., in *Savannah News*.

THE SEWAGE OF LONDON.

General Scott, in his recent paper at the Society of Arts, entitled "Suggestions for Dealing with the Sewage of London," deserves credit for having drawn attention to a subject which in itself must have especial interest for all residents in the metropolis, but which, from the manner in which he has dealt with it, possesses further attractions for those who have made the scientific aspects of the sewage question their study, in that he has really attacked this much-debated problem in an entirely new direction, and has in so far entered upon fresh ground. We do not remember that any previous investigator has set himself the task of examining into the composition and character of the suspended matters of water-carried sewage, coupled with the possibility of the mechanical separation, by simple subsidence (1) of the heavier mineral particles, or the detritus, and (2) of the lighter flocculent particles, which latter, consisting as they do mainly of the fecal matters, possess a far higher manurial value than the heavier substances washed from the roads and pavements.

The sludge deposited from sewage by one or the other systems of precipitation has received hitherto the chief share of attention from scientific men, and, even when the possibility of recovering the solid matters in sewage by some system of straining or rude filtration, or the retention of such solids in tanks, in which the sewage is brought to temporary quiescence, has been considered, it seems, on all occasions, to have been the practice to regard the entire bulk of such deposits as an inseparable compound of very low value from the manure point of view. It is, of course, the manurial value of the ingredients contained in suspension and in solution in sewage which has been so frequently inquired into by chemists; and, beginning with the report of Dr. Hoffman and Mr. Witt, in 1857, down to that of Messrs. Rawlinson and Read, in 1876, a vast mass of valuable information concerning the nature, composition and value of the manurial elements of town sewage has been accumulated. It has remained for General Scott to point out that—

1. A very large proportion of the solid suspended matters may be removed from sewage by simple subsidence.

2. That such matters may roughly be separated, the more valuable from the valueless, by the method in which such subsidence is accomplished.

3. That, after such preliminary treatment, any chemical process for the clarification and partial precipitation of the dissolved impurities of sewage may be carried out far more readily, and under conditions rendering their success, in an economical point of view, one of greatly increased probability.

4. General Scott has indicated various simple methods for dealing with the silt and detritus removed from the sewage at a relatively small expense; of deodorizing and fitting the sludge obtained by subsidence for the manufacture of a manure; and, lastly, a mode of further purifying the London sewage by a system of chemical treatment, whereby it may be rendered suitable for discharge into a river of large volume.

Assuming the dissolved impurities to be incapable of recovery, un-

less the sewage water can be utilized for irrigation, the first object of General Scott's paper was to show how large an amount of harm was done to rivers and the dwellers on their banks solely by the solid matters contained in sewage. By means of extracts from the reports of the various Royal Commissions who have examined into this question, and the information furnished to the Metropolitan Board of Works by their own advisers, Messrs. Bidder, Hawksley and Bazalgette, he proved that the deposits in the river, the mud banks, the foul emanations from which were most unhealthy, and the dangers to navigation, were all due to the discharge of the solid ingredients of raw sewage into rivers and into the Thames.

General Scott next entered very minutely into the composition of the suspended matters of sewage. An estimate of the total weight of solid matters due to a mixed population of 3,500,000 persons, with a proportionate allowance for the fertilizers existing in the excreta of animals, together with the *débris* of the animal and vegetable substances which might find their way into the sewers, would manifestly represent the sum total of the organic matters in London sewage.

Concerning the gross annual amount of organic matters different estimates appear to vary very slightly, and, in assuming them, in the case of London, at 50,000 tons per annum, there would seem to be but a small margin for error; the quantities of detritus, however, have been very differently stated by the various authorities. From the most reliable analyses of the London sewage, taken at all periods of the day and night, and in many different parts of the metropolis, there appears to be a tolerable unanimity in assigning the ratio of the organic to the mineral ingredient of the suspended matters to be as 1 is 2. After a period of settlement it is found that the proportion is, by the subsidence of the heavier mineral particles, exactly reversed, as the larger portion of these valueless components of sewage impurities rapidly subside, entangling with them about one-fifth of the organic matters in suspension. General Scott proposes, therefore, a double system of tanks. The first set would consist of a series of shallow catch pits, in which the sewage will only be brought to a state of partial repose, and in which it will part with about four-fifths of the solid mineral matters and one-fifth of the organic matter. In the second set of tanks, in which more time will be given for the settlement of the matters in suspension, the sewage will be deprived of nearly all the remaining suspended impurities, namely, one-fifth of the mineral and four-fifths of the organic matters. If we assume the gross weight of the organic matters at 50,000 tons per annum, the mineral ingredients will, according to the analysis quoted by General Scott, equal 100,000 tons, and the total of 150,000 tons thus obtained, is, in reality, a very low estimate of the amount of the suspended matters in London sewage. These matters, General Scott is of opinion, he could roughly separate in his tanks thus :—In the detritus tanks he would obtain 80,000 tons of mineral matters, together with 10,000 tons of organic matters ; in the second set of tanks he would expect to find about 20,000 tons of mineral matters mixed with about 40,000 tons of organic matters. The exact percentage composition of this latter sludge would, he believes, after studying and comparing many analyses and valuations, be somewhat as follows :—

Organic matter (without nitrogen)	66·50
Nitrogen	3·50
Phosphoric acid 2·80 = tribasic calcic phosphate	6·07
Potash	1·25
Sand and inert mineral matter	22·68
	100·00

In the debate which took place after the paper, Dr. Frankland, while admitting General Scott's process to be "worthy of trial," took exception to this estimate, and maintained that his experience was "that after the separation of detritus from London sewage, the maximum percentage of organic matter was 63, whilst the minimum was 21, the average being 39½, and these high percentages were obtained under exceptionally favorable circumstances, because, in the collection of these samples of sewage, little or none of the so-called detritus was mixed with it at all." He further stated that "he did not think it would be safe to calculate on more than 33 per cent. of organic matter in the dried sludge." This question of the possibility or otherwise of effecting a separation more or less perfect, of the mineral from the organic elements of the sludge, lies at the root of General Scott's proposals, and, while giving all due weight to Dr. Frankland's high authority, we are compelled to admit that General Scott's figures, many of them based on the analysis of Dr. Frankland himself, seem to point in the opposite direction to that pointed out by Dr. Frankland, as concerns the relative proportion of the mineral and the organic matters after settlement.

The question to be decided is, admitting the composition of the sewage solid to be, in the first instance, 2 mineral to 1 organic, can we reduce this proportion to 2 organic to 1 mineral, by bringing the sewage to a state of quiescence in tanks? This could be tried on a sufficiently large scale to settle the point at issue in a very short time, and, as it is a question which, to a great extent, depends upon the result of actual experiment on a large scale, it is certainly one for the officers of the Metropolitan Board of Works to decide.

Passing over the theoretical values of the deposits, based upon their contents in nitrogen, phosphoric acid and potash, which General Scott has dealt with very carefully, we come to the question of deodorizing the sludge and its preparation as a manure. For the former purpose, the employment of slaked lime is advocated, used in the small quantity of only ·66, or less than 1 per cent. of the total weight of the sludge. This slaked lime, made into milk of lime by the addition of water, is to be thoroughly incorporated with the sewage deposit, and a sufficient amount of crude superphosphate is then to be added, in order nearly, but not quite, to neutralize the lime. A crystalline precipitate of phosphate of lime is thus formed in the sludge, which greatly aids in the drying of the compound, or, to put it more correctly, facilitates the extraction of the water. Some of those who took part in the debate doubted whether General Scott, in his estimate of 20s. per ton on the dried material, which included the cost of chemical treatment, had made a sufficient allowance for the great labor and difficulty which would have to be incurred in drying the sludge for use as a manure. Dr. Voelcker, who pointed out that "he had gone very carefully into the figures in the paper, and was

very glad to find that General Scott had avoided those exaggerations which frequently disfigured calculations of this kind," quoted some observations he had made, tending to show that sewage sludge parted with water with extreme difficulty, though he admitted that, after treatment with lime and phosphoric acid, such sludge would dry with greater rapidity. In the various forms of filter presses now largely used for drying clay slip and expressing precipitates, very great improvements have recently been effected, and it has been stated on good authority that it becomes possible, by their use, to reduce the moisture in such materials as low as 50 per cent. There still remains, however, a large proportion of water to expel, and, as Dr. Voelcker stated, this can only be accomplished by means of artificial heat.

The question of the cost of drying sludge is one which possesses many features of interest, and the entire subject would be one well worthy of the special consideration of the Society of Arts at their annual conference on the treatment of sewage. We should like to have devoted more time to the calculations of General Scott of the theoretical value of the three chief fertilizers present in sludge, viz., nitrogen, phosphoric acid and potash, as also to the expense of preparing soluble phosphoric acid, concerning which latter point, Dr. Voelcker threw out some valuable suggestions during the discussion; but we must now conclude. We entirely agree with General Scott in his denunciation of the folly and imprudence of continuing to cast raw sewage into the Thames ; he has certainly pointed out a way of greatly abating the present evil, and, as the plan he advocates could be tried upon a sufficient scale at an almost nominal expense, we feel justified in urging with Dr. Frankland that this should be done, and we cordially echo his concluding observation, "that the Board of Works have no right to look for a profit in getting rid of the objectionable matter. If they can succeed in doing it without a loss or at a cost not greater than that involved in dredging it out of the river again, it ought to be done ; because, if sewage mud is deposited in the river, there must be an obstruction to navigation; besides, the putrefaction of organic matters, which, when deposited on the banks of a tidal estuary, become very offensive, especially in warm weather."

So far as one can judge from the facts adduced by General Scott, his scheme promises to be more efficient for the ends aimed at than any hitherto proposed, and certainly it seems to us that the great scientific principles which are applicable to the subject have been kept well in view. And, from our standpoint, this must be the test of the efficiency of any scheme for the disposal of sewage. We fear that hitherto those with whom the decision rests as to what scheme shall be adopted for the disposal of the sewage of London have looked upon the question too much as one between rival "schemes," and considered far too much the supposed interests of rival "bodies," and too little the clear teachings of science and the welfare of the public. It is evident that for London, at least, the whole subject of the disposal of sewage will have very soon to be reconsidered, and we trust that the authorities concerned will take into their council reputable chemists and physicists, who, we are sure, can have no interests more at heart than to see the unmistakable teachings of science practically applied to the salvation of society.—*Nature.*

THE NAUTICAL ORIGIN OF YELLOW FEVER.

PENSACOLA, FLA., Jan. 22d, 1880.

ED. SANITARIAN: In your brief notice of Prof. John Gamgee's book entitled "Yellow Fever a Nautical Disease," you honor me with the mention of my view of the origin of yellow fever, and term it a "hypothesis." I beg leave to differ with you in your definition of my sentiments with regard to the origin of yellow fever, notwithstanding your superior excellence as a sanitarian and journalist, and the just deference due you. The proposition to which you allude is an important one, and, if shown to be true, will be a step—nay, a stride, a long one—in advance, in a sanitary point of view.

It seems to me my views of the origin and cause of yellow fever have been misapprehended, and I cannot conceive any way in which they could be misconstrued other than some slight ambiguities or inaccuracy of language; and yet, by a careful examination of my published papers, it would appear impossible for any intelligent mind, after an attentive persual, to detect either. I said in substance, if not precisely in the same words, that under certain meteorological conditions, not well understood, or some occult cosmic influences, yellow fever would propagate in a pure atmosphere—that is, in an atmosphere free from emanations from filth, or from marsh miasmata, *"when the germs were introduced from abroad, not otherwise."* I said, also, that if the whole contents of an Augean stable mixed up with the offal of a thousand butchers' pens, and I might add with the contents of all the sewers of London and Paris, under conditions of the atmosphere favorable to the propagation of zymotic diseases of an infectious or contagious nature, without the presence of the germ or morbific principle, be it what it may as to its essential quality, yellow fever could not be produced, no more than small-pox, scarlet fever or measles, or any other specific contagious disease, without a sufficient number of germs or adequate quantity of the *materies morbi* to set in motion a multiplication or increase of the specific malady.

Now, here, I propose to state my theory or "expressed results" of my deductions from well authenticated facts in such terms as cannot possibly be misconstrued, viz.: Yellow Fever is not only exotic, so far as North America is concerned, but never originated *spontaneously* anywhere *on land* without the germ or morbific principle having been previously introduced from abroad, as intimated above, or from the hold of a ship, "which is the same thing," when it originates once in a while, *sua spurte*, under favorable circumstances in the equatorial seas.

Yellow Fever was never known or recognized in either the Eastern or Western continent before it was brought into the West Indies by ships or "a particular ship" (Labat). *There*, in the West India Islands, the germ of the disease first found a congenial climate and soil for the propagation and spread of its progeny, and, like an exotic annual plant, became naturalized or domesticated, and hence its continuance or periodical reproduction and prolification.

Now the climate and soil of Pensacola, as well as many other places immediately bordering the Gulf of Mexico, north, differ in several respects from the soil and climate of Havana, and consequently the seeds of the disease, yellow fever, perish in Pensacola, and other places, during a winter following an epidemic of the preceding summer and fall, and that malady does not, and I believe *cannot* recur, without a fresh importation.* I make this statement on the results of thirty years' close observation and study.

Here this short communication should properly terminate; but I cannot forbear to observe, that I propose, ere very long, to present to the profession a fair and just *exposé* of the truth, a proof of the postulate, that had it not been for the commerce or navigation of the equatorial seas, *cæteris paribus*, yellow fever never would have had "*a local habitation or a name.*"

Now, while contending for the primitive origin of yellow fever on ships from *local sources* of infection existing in the vessels themselves, of course I know that *filth* constitutes the "*local sources*" from which is generated the specific poison or pathogenic agent, which is the *causa causans* of yellow fever. But this filth in the ship's hold has peculiarities and exists under very different circumstances from that which appears *on land*, in and on the borders of marshes or in sewers or ditches, or in prisons or tenement houses, etc. The filth, of course, is composed of decomposing animal and vegetable matters, but in a *concentrated* form, in a small space, consisting of a close cavity of timbers, excluded from light and fresh air, beneath the waters of the sea, and under the burning rays of a tropical sun, from which is absorbed an immense amount of heat, which often reaches to 110° Fah., commonly from 90° to 100°—and the motions of the ship under the circumstances may determine the quality of the poison, which results, undoubtedly, from chemical action. Many analogies might be adduced in support of this hypothesis, *e.g.*, the production of butter by churning at a certain temperature, the conversion of one isomeric body into another by mere dynamization, or the conversion of refined sugar into gum by rubbing a certain length of time in a mortar. But be the explanation what it may, the specific cause, the *causa causans* of yellow fever, whether it be a living germ or dead organic matter, a gaseous product of a pestiferous character or nature, no matter what, or how induced, it is created in the hold of a ship—nowhere else.

ROBT. B. S. HARGIS, A.B., M.D.

---

*The yellow fever in Memphis, which is outside the borders of the Gulf, either recurred last year (1879) from a fresh introduction of germs, or from the hybernating organisms of the preceding year. If from the latter, they were kept alive or in a state of vitality in clothes, bedding, etc., by the warmth of the houses, kept up by the burning of fires on the approach of cold weather and during the winter and spring. *Filth* doubtless played its part as a pabulum in fostering the germs, but had nothing to do *per se* with the generating of the *morbific principle* of the malady.

MENU.

Breakfast Dishes.—*Minced Meat Pie:* Chop about 1 lb. of cold meat, veal is best, very finely with a little fat bacon, flavor with a little cayenne, salt, and mace, the grated rind of a small lemon, and a small quantity of the juice, add the yolks of three eggs and the white of one. Border a pie dish with paste, put in the mince, cover with paste, or with mashed potatoes, and bake in a moderate oven.

Grilled Legs of Fowl.—Take the legs of cold fowl, score them well, and rub in plentifully some made mustard, salt, and cayenne; broil over a clear fire, and serve with:

Grill Sauce.—Take one gill of good gravy, add to it one tablespoonful of mushroom catsup, one teaspoonful of French mustard, a few chopped capers, and a little grated lemon peel: add a little butter rolled in flour, a few drops of Chili vinegar, simmer until quite hot, pour over the legs and serve.

Mince and Polenta.—Mince up some meat well freed from fat and gristle, slice an onion, and fry it in butter until of a golden color; add a little gravy, and the mince flavored with a little chopped parsley and pepper, salt and spice to taste; let the whole simmer a few minutes, and then serve with a wall of polenta which has been well boiled, then mix with a little butter and grated Parmesan cheese. A few whole tomatoes or poached eggs, on the top, are an improvement to this dish.

Ham Croquettes.—Take ¼lb. of grated ham, and mix with it 2oz. of mashed potatoes; melt a piece of butter in a saucepan, add the mince, season with a little pepper, a very little stock, a little powdered sweet herbs and chopped parsley; stir until quite hot, then add, off the fire, the yolks of two eggs; lay the mince on a plate to cool, make into croquettes, roll them in egg breadcrumbs, and fry in hot lard; serve with fried parsley.

Fish Cakes.—Take the remnants of any cold fish, pull them to pieces, and thoroughly mix with them a small piece of butter and some mashed potatoes; season the whole with pepper and salt to taste, adding a little cayenne. Form the mixture into cakes, and fry in butter till of a golden color. Serve garnished with fried parsley. —*Caterer.*

Oranges and Lemons are well known to be among the most agreeable and wholesome of fruits. Oranges, especially, are a very salutary breakfast fruit, and if generally used instead of tea and coffee to satisfy morning thirst, dyspepsia in all its forms would be much less common. In sickness as in health oranges are almost universally admissible, rarely or never being the cause of any disorder in the system.

Lemonade is the most refreshing of all hot weather drinks, and of all antiscorbutics it is the chief. As a beverage in "putrid" diseases, it was first used by French physicians more than two centuries ago, and this led to its use for the prevention of scurvy, by which thousands of lives have been preserved. *Frozen* lemonade to feverish thirst, is the most refreshing and grateful of ices; and lemonade in effervescing draught with bicarbonate of potash, is one of the best of remedies for nausea.

Oranges and Lemons imported into the United States last year were valued at a little over $2,800,000, on which was paid to the government a duty of more than $560,000. Indeed, many political economists may be surprised to learn from the report of the United States inspector of customs that the value of green fruit entered for consumption at this port in the year 1878 aggregated $3,735,050, of which oranges and lemons amounted to $2,802,966, grapes to $232,000, bananas to nearly $400,000, and cocoanuts to nearly $200,000. The duty collected on these articles reached $666,000, the cocoanuts alone being free.

The extent of the traffic may be imagined from the fact that the number of oranges imported in cases last year was nearly 170,000,000, and the number of lemons in boxes 218,000,000. It is evident that the business of raising oranges and lemons in the Gulf states may one day become very profitable. The duty of 20 per cent. paid by the importer is not the only protection offered to the home grower. Out of the case oranges imported last year more than 60,000,000 perished on the voyage—a loss of 36 per cent., while in lemons the loss by decay reached 20 per cent. These facts ought certainly to encourage the raising of such fruit at home.

An Elaborate Lunch.—The New York *Times*, of recent date, is authority for the following: "A few days ago, the wife of one of our most millionary millionaires gave a lunch party at her Fifth Avenue home to seventy-two ladies. There were twelve tables, each table arranged for six guests, with different service, the cloth, napkins, glass, china, flowers, every bit of equipment and garniture, indeed, even to the gas shades, harmonizing in color and design. The glass and china were of novel pattern and the costliest kind, and the napkins and table-cloths elaborately wrought. Instead of the ordinary cards, with the names inscribed, were cards finely and specially painted, deserving to rank as works of art, the subject suggested by gastronomy in some form or other. As mementoes, various trifles, as they were called, were placed beside the plates. They were fans, bouquet-holders, ornamental glove-buttoners and the like, each and all of curious and dainty workmanship. The effect of the twelve tables and their varied service, with the guests in rich visiting dress of the latest mode, must have been ravishing to the feminine eye, though it is doubtful if the masculine mind could have had any just appreciation of the ingenuity and expense of the entertainment. It was intended to be, and probably was, the most elaborate luncheon party yet given in the city, and luncheon parties have been a feature of metropolitan society this season. We are obviously not drifting toward the days of rigid economy and Spartan simplicity."

Whatever in the way of food is plunged into a large body of boiling fat is instantly sealed up by the formation of a film or skin, which preserves the juices and their flavors, and excludes the grease; hence scientific frying is really one of the very best modes of cooking, while on the other hand the blundering starve-farthing way is the very worst.—*Caterer.*

Piccalilli.—One peck of green tomatoes; quarter peck sliced onions, slice and salt over night; one handful scraped horseradish: ounce tumeric powder; ounce each of cloves and cinnamon: quarter

pound whole pepper; pound each of mustard seed and flour mustard. Put in a large preserving kettle alternate layers of tomatoes, onions, cauliflower, some sliced green pickles, which have been cut up and salted over night, also one or two green peppers, with all the other ingredients; cover the whole with vinegar; boil fifteen or twenty minutes, stirring carefully. Pour off all the water that forms on the pickle when they lay in the salt.

A Novelty in the Way of Sandwiches can be made with tinned preserved salmon, and by using mayonnaise sauce instead of butter. First make some good thick mayonnaise sauce by dropping oil drop, by drop, in the yolk of an egg, carefully separated from the white, and beating it with a fork. Do not use any vinegar or pepper and salt at starting, or failure may result. Keep adding oil and beating till the mixture gets as thick as butter. Now add some Tarragon vinegar, about a teaspoonful will suffice, and a little white pepper and salt. Butter some thin slices of bread with this sauce and place a very thin layer of salmon between them, having first thoroughly pounded the salmon in a mortar or basin, and then, after gently pressing the slices of bread together, cut the slices into little triangular pieces and pile them upon a plate, ornamenting the dish with nice bright parsley, and placing a few small crayfish, with outstretched claws, round the base, with one on the top. It is a pretty, delicious and inexpensive dish. Good-sized prawns may be advantageously substituted for the crayfish.—*Caterer.*

Hans in a Fix.

Ven I lays myself down in my lonely ped room,
  Unt dries vor to sleep werry soundt,
De treams,—O, how into my het tey vill gome,
  Till I vish I was unter ter groundt!

Somedimes, ven I eats von pig supper, I treams
  Dat my shtomac is filt full of shtones,
Und out in mine shleep, like ter tuyfel, I schreems,
  Unt kick off ter ped-glose, unt groans!

Den dere, ash I lay mit der ped-glose all off,
  I kits myself all over vrose;
In te morning I vakes mit te headaches unt cough,
  Unt I'm zick vrom mine het to mine does.

O, vat shall be dun ver a poor man like me?
  Vat for do I lif such a life?
Some say dere's a cure vor drouples of me:
  Dinks I'll dry it, und kit me von vife!

Homœopathic Expositor.

Burst.—A doctor gives in a German medical journal a detailed account of a man who literally burst, split his diaphragm in two, and died. He had swallowed four plates of potato soup, numerous cups of tea and milk, and taken a large dose of bicarbonate of soda to aid digestion. His stomach swelled enormously, and tore the diaphragm on the right side, causing immediate death.

Death-rates per 1,000 inhabitants, annually, from all causes; and from causes which are usually preventable. Condensed from report of National Board of Health Bulletin.

Mortality in United States.	Population.	Total No. of Deaths from all Causes.	Deaths under 5 years	Annual Death-rate per 1,000.	Consumption.	Small-Pox.	Diphtheria and Croup	Scarlatina.	Measles.	Whooping Cough.	Malarial Fevers.	Typh'd & Typhus F'rs	Diarrhœal Diseases.	Puerperal Diseases.	Yellow Fever.
Atlanta.—4 weeks ending Feb. 21st	39,000	44	18	13.7	9	..	..	..	..	3	..	..	..	..	..
Baltimore.—4 weeks ending Feb. 21st	400,000	545	213	17.7	84	..	38	34	5	12	5	9	5	3	..
Boston.—4 weeks ending Feb. 21st	375,000	589	204	20.9	91	..	48	5	..	10	..	10	7	7	..
Brooklyn.—4 weeks ending Feb. 21st	564,448	892	347	20.5	141	..	105	23	16	12	10	2	11	19	..
Cambridge.—2 weeks ending Feb. 21st	50,000	33	12	18.1	5	..	..	..	..	..	..	..	..	..	..
Charleston.—4 weeks ending Feb. 21st	57,000	103	45	23.5	15	..	4	..	1	1	..	5	..	..	..
Chicago.—4 weeks ending Feb. 21st	537,624	742	361	17.8	73	..	145	41	21	4	7	8	20	6	..
Cincinnati.—4 weeks ending Feb. 21st	280,000	305	121	14.1	50	..	5	15	..	6	..	9	2	2	..
Cleveland.—4 weeks ending Feb. 21st	175,000	236	115	17.3	14	..	24	30	..	11	2	..	1	1	..
Dayton.—4 weeks ending Feb. 21st	39,000	45	9	15.3	4	..	9	3	..	..	..	..	..	..	..
District of Columbia.—4 weeks ending Feb. 21st	160,000	321	131	19.6	76	5	9	2	..	4	1	2	5	5	..
Dubuque.—4 weeks ending Feb. 21st	30,000	16	7	6.9	1	..	3	..	..	..	..	..	..	..	..
Erie.—4 weeks ending Feb. 21st	30,000	38	13	16.4	5	..	2	4	..	1	..	..	..	..	..
Evansville.—4 weeks ending Feb. 21st	37,500	59	21	18.1	10	..	1	3	..	..	..	3	..	..	..
Fall River.—1 week ending Feb. 21st	48,500	29	..	31.2	2	..	..	4	..	..	..	..	..	..	..
Hudson Co., N. J.—4 weeks ending Feb. 21st	199,000	247	108	16.2	32	..	11	18	..	..	2	3	1	..	..
Houston	30,000	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Indianapolis.—4 weeks ending Feb. 21st	97,060	107	51	14.2	9	..	5	12	1	2	4	3	..	1	..
Kansas City.—1 week ending Feb. 14th	61,000	17	5	14.5	2	..	1	..	1	..	1	..	..	..	..
Lawrence.—4 weeks ending Feb. 21st	40,000	54	19	10.	2	..	2	..	..	..	1	3	1	1	..
Louisville.—4 weeks ending Feb. 21st	175,000	167	69	13.1	30	..	3	3	1	1	1	7	4	..	..
Lowell.—4 weeks ending Feb. 21st	52,000	94	36	23.5	21	..	4	3	1	..	..	1	3	1	..
Milwaukee.—4 weeks endiug Feb. 21st	124,000	160	80	16.8	20	..	17	4	2	1	1	2	3	3	..
Minneapolis.—4 weeks ending Jan. 17th	52,000	45	17	11.2	10	..	6	1	..	1	..	1	..	..	..
Mobile.—4 weeks ending Feb. 21st	40,000	73	12	20.5	11	..	..	..	..	..	1	1	4	..	..
New Haven.—3 weeks ending Feb. 21st	60,000	75	38	21.7	9	..	6	..	6	1	2	1	4	6	..
New Orleans.—4 weeks ending Feb. 21st	210,000	405	123	25.1	72	..	14	..	9	13	4	23	3	..	..
New York.—4 weeks ending Feb. 21st	1,097,563	2,061	810	24.9	358	..	139	34	88	25	30	11	36	36	..
Omaha.—4 weeks ending Feb. 21st	30,000	27	10	11.7	4	..	3	1	1	1	..	1	2	..	..
Philadelphia.—4 weeks ending Feb. 21st	901,380	1,227	425	17.7	212	12	60	20	12	5	1	29	4	1	..
Pittsburg.—4 weeks ending Feb. 21st	145,000	254	112	21.8	25	..	26	10	1	16	..	18	2	2	..
Providence.—4 weeks ending Feb. 21st	101,500	190	64	24.4	27	..	10	43	..	..	..	1	1	4	..
Peoria.—4 weeks ending Feb. 21st	40,000	36	5	11.7	8	..	1	3	3	..	..	1	..	..	..
Quincy.—4 weeks ending Feb. 21st	35,000	45	14	16.7	5	..	2	..	..	3	..	1	..	..	..
Reading.—4 weeks ending Feb. 21st	40,109	69	27	22.9	4	..	10	1	..	..	1	1	..	1	..
Richmond.—3 weeks ending Feb. 14th	80,000	80	31	17.3	18	..	1	..	..	..	1	1	1	6	..
Rochester.—1 week ending Feb. 21st	90,000	40	10	23.2	9	..	6	2	..	..	..	..	..	..	..
San Francisco.—4 weeks ending Feb. 21st	300,000	365	94	16.2	67	..	7	2	1	2	1	3	6	9	..
Savannah.—4 weeks ending Feb. 21st	32,656	70	21	24.5	11	..	1	..	..	..	1	3	1	..	..
St. Louis.—4 weeks ending Feb. 21st	500,000	628	143	11.1	69	..	25	5	9	4	11	8	8	7	..
St. Paul.—4 weeks ending Feb. 21st	51,080	43	14	10.7	5	..	1	..	..	..	..	1	..	..	..
Utica.—4 weeks ending Feb. 21st	35,000	34	2	15.1	2	..	..	..	..	..	..	..	..	..	..
Wheeling.—1 week ending Feb. 21st	35,000	8	4	14.1	..	..	1	..	2	..	..	..	..	1	..
Wilmington.—4 weeks ending Feb. 21st	44,013	57	19	16.8	10	..	1	1	..	..	..	..	..	1	..
Mortality in Foreign Cities.															
Antwerp—1 week ending Feb. 7th	169,981	103	..	31.6	..	5	..	..	..	..	..	1	..	..	..
Buda, Pesth—1 week ending Jan. 31st	309,705	213	..	36.1	..	5	..	..	..	..	..	5	..	..	..
Bucharest	211,380	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Bremen.—1 week ending Feb. 7th	105,000	60	..	29.8	..	..	..	..	..	..	..	..	..	..	..
Brussels—1 week ending Feb. 7th	399,482	195	..	25.7	..	2	..	..	..	..	..	1	..	..	..
Belfast	212,000	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Berlin.—1 week ending Jan. 31st	1,062,500	520	..	25.6	..	..	..	..	..	..	..	2	..	..	..
Christiania.—1 week ending Jan. 31st	113,000	27	..	12.5	..	..	..	..	..	..	..	..	..	..	..
Dresden—1 week ending Jan. 31st	215,440	90	..	15.8	..	..	..	..	..	..	..	1	..	..	..
Frankfort.—1 week ending Feb. 7th	120,000	51	..	21.1	..	..	..	..	..	..	..	..	..	..	..
Glasgow	578,156	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Havana.—1 week ending Feb. 14th	195,437	125	..	33.4	..	2	..	..	..	..	..	..	..	..	2
Leghorn.—1 week ending Feb. 14th	97,410	64	..	34.1	..	..	..	..	..	..	..	3	..	..	..
Leipsic—1 week ending Feb. 7th	145,719	72	..	24.8	..	..	..	..	..	..	..	..	..	..	..
Lyons—1 week ending Feb. 7th	342,815	288	..	43.1	..	10	..	..	..	..	..	1	..	..	..
London	3,620,863	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Liverpool.—1 week ending Feb. 14th	538,338	312	..	30.2	..	..	..	..	..	..	..	5	..	..	..
Leith.—1 week ending Feb. 7th	57,000	26	..	23.4	..	..	..	..	..	..	..	..	..	..	..
Montreal	135,000	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Paris.—1 week ending Jan. 12th	1,988,806	1,521	..	39.8	..	70	..	..	..	..	..	102	..	..	..
Rouen.—1 week ending Feb. 14th	104,902	136	..	67.6	..	..	..	..	..	..	..	..	..	..	..
Stockholm.—1 week ending Jan. 31st	169,429	71	..	21.8	..	..	..	..	..	..	..	1	..	..	..
Trieste	127,873	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Warsaw	336,703	..	..	..	..	..	..	..	..	..	..	..	..	..	..

Editor's Table.

Correspondents and Exchanges will please observe we have not changed our title, only changed our publication office, on account of fire. Please address,

The Sanitarian,

Office of Publication, 8 Spruce Street. } New York, P. O. Box 2156.

The Thirty-sixth Annual Report of the New York Association for Improving the Condition of the Poor, for 1879, is painfully suggestive of an immense amount of avoidable misery in New York, but mollified by much open-handed charity and private benevolence. We have here represented the organized charity-work of about 2,500 citizens, who have during the year administered to the relief of upwards of 11,000 families, aggregating in moneyed cost $21,694.66, besides $2,400 appropriated to the Association by the city, spent for coal. Moreover the Association has been otherwise active in good works, in a special effort to reform the tenement house system, and in securing the passage of an amendatory enactment, requiring increased space, light and ventilation, and putting tenement houses more directly under the surveilance of the Board of Health. Under this enactment some progress has been made in tenement house reform, which there is reason to hope will not stop short of a thorough revolution—such a revolution as will totally wipe out of existence many tenement houses which are still permitted to disgrace the city. Foremost among the influences at work in this direction are the excellent "White" model houses in Brooklyn, literal apartment-houses, with every modern convenience, but in point of economy adapted to the necessities of the poor, and greatly promotive of health and morality. But it is the misfortune of New York, that the ground for such houses as those of Mr. White in Brooklyn is pre-occupied—there is no room for them. And in this particular we are constrained to take issue with this report, which shows altogether too much favor to the sufficiency of improving existing tenements, and building others no better in the heart of the city, already too much built upon, instead of insisting upon the total removal of this class of buildings from the overcrowded parts of the city. The great pecuniary value of the tene-

ment house property is continually kept in the foreground, and public sentiment subordinated to it, regardless of health and life. So despicable is the system still in New York, that no half-way measures should be tolerated by any one who values the health and morals of the people, and above all should not be by this Association, so powerful for good works, if it will wholly divest itself of sympathy for some of its members, who, there is reason to fear, are altogether too much interested in the value of tenement house property of the meaner sort.

Sanitary Science Recognized by New York Aldermen!—The following resolution recently adopted by the Board of Aldermen of New York, and approved by the Mayor, suggests that possibly the day has gone by when political ventilators were deemed good enough protectors for legislative halls and court rooms:

Resolved, That the Board of Health be and is hereby directed to immediately cause a critical examination of the several court rooms in this city, and report to this board the condition of each in regard to ventilation, with such suggestions or recommendations as, in the opinion of the health officers, will improve the atmosphere of these crowded rooms and render them healthy and free from impure air.

Will the New York and Brooklyn Boards of Education follow the example?

New York Mortality Statistics for 1879.—Dr. JOHN T. NAGLE, Registrar, reports to the Board of Health, that of the 28,342 persons whose deaths were recorded during the past year, 2 were natives of Africa, 85 of Austria, 2 of Australia, 13 of Belgium, 77 of Bohemia, 7 of British America, 11 of China, 1 of Central America, 18 of Denmark, 3 of the East Indies, 533 of England, 155 of France, 2,769 of Germany, 1 of Gibraltar, 2 of Greece, 35 of Holland, 4,946 of Ireland, 1 of the Isle of Man, 136 of Italy, 1 of Mexico, 1 of New South Wales, 16 of Norway, 36 of Poland, 1 of Portugal, 61 of Russia, 178 of Scotland, 6 of South America, 51 of Sweden, 87 of Switzerland, 9 of Spain, 18,833 of the United States, 16 of Wales, 48 of West Indies, 1 at sea and 95 unknown.

Receiver Sharp, by his progressiveness in the management of the Long Island Railroad, continues to render Long Island more and more attractive, insomuch that all the railroads of the Island bid fair, ere long, to become concentrated under his successful management.

The Southern Railroad Company, recently reorganized, under the name of the Brooklyn and Montauk Railroad Company, is now known as the Montauk Division of the Long Island Railroad; and arrange-

ments are in progress for the establishment of a new line of the L. I. R. R. Co., from New York and Brooklyn to Block Island and Newport, by way of, and to connect with boats at Greenport, in three hours. Trains will only stop at Jamaica for the connection with Brooklyn. Three new steamers have been secured, one of them to be used as a freight boat, to be run from Greenport to New London, there connecting with the railroad from Boston.

For the encouragement of farmers and new settlers, liberal reductions have been made on freights, and corresponding reductions in passenger rates, to and from all parts of the Island, which, taken in connection with the healthfulness of the climate, fruitfulness of the soil, unequaled sea beach for surf bathing, and beauty of shaded coves and bays—all combined—render Long Island not only the most accessible, but the most delightful of all regions for the overflow of New York and Brooklyn, both as transient resorts and permanent settlements.

What is in a Name?—Our esteemed contemporary, *The Plumber and Sanitary Engineer*, whose recent effort to change its name has demoralized some of our correspondents, confused the post-office clerks and diverted some of our exchanges and books, is well nigh thrown into convulsions because another journal has stepped in ahead of it and seized the coveted title of "Sanitary Engineer." "*The Sanitary Register* of London," says our neighbor, "has changed its name to *The Sanitary Engineer*, the title by which our journal is generally known. It is evidence of either financial or moral weakness when publishers of an established paper steal a name from another. We suppose this is one of the penalties of a good record. Our British contemporaries will no doubt notice this act of piracy," etc. This is very ungracious on the part of our neighbor, and the more by reason of the shortness of time since the *Plumber* was the big end of its pestle and chief stock in trade, and the means by which a great deal of sewer gas was gotten rid of. We hope, for the sake of the trade and excellent following, our neighbor will cease to eschew the name of *The Plumber;* that it will see what it holds as evidence of weakness and debasement in another would apply equally to itself; that it will recover of its mortification and persist in the battle against sewer gas as among the most prolific sources of disease, in mansions as well as tenements, in churches as in school-houses, in playhouses as in halls of justice—in all the high-ways and by-ways of New York and other cities of the United States, sewer gas is a prolific source of disease to all classes, and the field of *The Plumber* proportionally large.

Literature.

Ministry of Health* is, in some respects, the best of Dr. Richardson's books, containing a selection of eight of his addresses on sanitary subjects and his admirable one on the immortal Harvey. The first, or opening address, which gives title to the book, is his most recent, and characteristically radical; but the better for that, and no more so than the oldest of the selection—on Registration of Disease—of which the whole civilized world is now reaping the fruit. Indeed, his latest is, in a measure, the interpreter of the oldest. The Registration of Disease, of epidemic diseases, especially, outlines the benefits to accrue from its adoption: a proposition at the time deemed to be so radical as to be contested on the ground of private rights, and an infringement of the confidence between the physician and patient, accorded by both common law and common usage. Indeed, it is even yet contested on these grounds by some people in the United States. But where is the sanitarian who does not know that the Registration of Disease, urged by Dr. Richardson eighteen years ago, was the forecast and foundation of subsequent success in stamping out epidemics? A growing public sentiment has well nigh put to silence all clamorers for the private or confidential right of any one's killing his neighbors with typhoid fever or small-pox; and the day is not far distant, we trow, when, under an enlightened Ministry of Health, this kind of murder will be deemed and treated as it should be—as equally criminal with the administration of other poisons. For, as Dr. Richardson well says: "We must move, because we cannot remain as we are. We have piled up such a number of sanitary valuables, we do not know how or where to lay our hands on them when we want them. The basis of a Ministry of Health is already laid."—And right nobly is the detail, the catalogue of valuables requiring the highest order of ministerial skill, summarized by this master in sanitary science. And not one of the other six addresses—A Homily Clerico-Medical; Learning and Health; Vitality, Individual and National; The World of Physic; Burial, Embalming and Cremation; Ether-Drinking and Extra-Alcoholic Intoxication—that does not trend the same way, that does not more or less show the well-nigh full-grown

* Ministry of Health and Other Addresses. By Benjamin Ward Richardson, M.D., F.R.S., M.A., L.L.D., F.S.A., etc. New York: D. Appleton & Co.

necessity for a Ministry of Health as among the most essential means of promoting a nation's wealth. But, lest our characterization be misconstrued, Dr. Richardson's radicalism is of that kind by which all professions and parties—the whole human race—is benefited, and by which all readers of this book may profit; the kind which seizes on the best as the fittest condition for the whole; which never compromises good with evil; which considers human misery, disease and premature death as unnecessary evils, inconsistent with the highest state of human progress, and to be gotten rid of at the earliest practical moment, and which regards the highest pinnacle of human culture as the true and only standard by which the degree of elevation should be measured. Such are the wholesome attributes of this book. It is full of the best thoughts of the most advanced writer on sanitary science.

Connecticut Medical Society Proceedings, 1879,* open with the minutes usual to such assemblies, comprehending, among much other interesting matter, the committee report revising the charter of the Medical Institution of Yale College, whereby the Board of Examination for the Medical Degree consists of an equal number of the professors of that institution and of the members of the Connecticut Medical Society, appointed by the President and Fellows of the same. In this connection, it is especially worthy of mention, Yale has adopted the *graded course* of study, extending over three full years. The college year extends from the first Thursday in October to the last day in June, with a vacation of two weeks in the latter part of February.

Under the provisions of the new charter, all students are required to have a thorough preliminary education, and to pursue a systematic course of study and recitations. *Honesty in Medicine*, the address of the President, Charles M. Carleton, M.D., next follows, full of wholesome truths, clearly put. Dr. W. R. Bartlett, in a dissertation on *The Principles of Hygiene and Conservatism in their Relations to Surgery*, gives an interesting sketch of surgery as it used to be as compared with what it now is, by the use of antiseptics and other conservative means of modern times. Annual Report of the Committee on *Matters of Professional Interest in the State*, is chiefly devoted to the etiology of diphtheria. Dr. Chamberlain's report, under this head, on Vital Statistics, so concisely states the importance of the subject, and so well sums up the relations of diphtheria to filth—in both city

* Eighty-eighth Annual Convention, held at Hartford, May 28 and 29. Published by the Society. C. W. Chamberlain, M.D., Secretary. Pp. 214. Hartford, Conn.

and country—that we have marked it for republication entire at earliest convenience. A paper by James Olmstead, M.D., First Assistant Physician Connecticut Hospital for Insane, on *Mortality of the Insane*, particularly dwells upon the fatality of diseases which bear no necessary relation to insanity, and of one New England hospital with a record of 54 deaths, 21 of which are recorded "exhaustion." In comparison with this and several others, the registration of the Connecticut Hospital is more explicit. The chief points of the paper are—the prevailing causes of death among the insane in New England hospitals, and the influence of insanity on the mortality of diseases, chiefly chronic, of the nervous and respiratory systems. Other interesting papers—which we regret the want of space to notice more in detail—are: *The Insane Colony of Gheel*, A. M. Shew, M.D.; *Yellow Fever*, M. Meyer, M.D.; *Alcohol as a Therapeutic Agent*, R. S. Goodwin, M.D.; *Urethral Incising Sound*, Geo. C. Jarvis, M.D.; *Typhlitis and Perityphlitis, or Disease of the Cæcum and Vermiform Appendix, Resulting in Inflammation and Abscess in the Right Iliac Fossa*, E. C. Kenney, M.D.; *Arsenic Eating*, P. A. Jewett, M.D.; *Atropine*, Thomas B. Jewett, M.D., and *Astringents in Chronic Conjunctivitis*, F. M. Wilson, M.D.

Transactions of State Medical Society of Wisconsin, 1878-9.—After Minutes follow the Annual Address of the President, Darius Mason, M.D., on the Popular Estimate of the Medical Profession, and some of its Claims upon the Public; Report on Surgery, by N. Senn, M.D.; The Diagnosis and Treatment of the So-called Tumor Albus, by C. Linde, M.D.; Pathology and Treatment of the Bite of the Rattlesnake, by G. W. Jenkins, M.D.; Cheyne-Stokes Phenomenon, by C. Ottillie, M.D.; Gynæcological Report, by Wm. Fox, M.D.; Placenta Prævia, by G. F. Hunt, M. D.; Aphasia, by Geo. D. Wilber, M.D.; Neurasthenia, or Nervous Exhaustion, by James Brown, M.D.; New Remedies, by F. H. Day, M.D.; New Remedies, by G. M. Steele, M.D.; Report on New Medical Literature, by J. G. Meachem, Jr., M.D.; Excision of Scapula, by E. P. Wolcott, M.D.; A Case of Opium Poisoning, by Harmon Van Dusen, M. D.; A Case of Fatty Tumor at the Orifice of the Pelvic Cavity, by R. M. Wigginton, M.D.; A Case of Inversion of the Uterus, at or before Three Months of Pregnancy, by H. A. Youmans, M.D.; A Case of Acute Endocarditis, Heart Clots, complicated with Small Fatty Kidney, by Henry P. Wenzel, M.D.; Croup and its Medical Treatment, by A. W. Lueck, M.D.; A Case of Scirrhus of the Eleventh and Twelfth Ribs, Removed by Excision of the Distal Aspect of Both, by J. C. Davis,

M.D.; A Case of Stabbing, by D. Du Bois, M.D.; Obituary Sketch of Hilton W. Boyce, M.D., by B. O. Reynolds, M.D.; Obituary Sketch of C. F. Ellsworth, M.D., by B. O. Reynolds, M.D.; Obituary Sketch of Louis E. Peck, M.D., by S. Marks, M.D., and Constitution and By-Laws.

The volume for 1879, pp. 306, opens with an instructive discussion on the use of the forceps, joined in by Prof. Jenks, of Chicago. The address of the President, Dr. Nicholas Senn, on *Medical Legislation*, gives a historical sketch of the status of medicine among civilized nations generally, and the early safeguards to protect people from quackery in this country. He advocates medical legislation as a part of general legislation for every well-organized government, as being necessary to protect the people and sustain a healthy influence of the medical profession, and higher medical education, and boards of examiners independent of colleges, and as free as possible of political influence, in order to attain a higher standard of professional excellence. Following the President's address are papers and reports on: New and Improved Instruments, by J. G. Meachem, M.D.; Psoas and Lumbar Abscess, D. LaCount, M.D.; Diphtheria, S. L. Marston, M.D.; Epidemic Influenza, E. L. Griffin, M.D.; Obstetrics and Gynæcology, I. K. Bartlett, M.D.; Encephaloid Cancer, Wm. F. Whyte, M.D.; Pathology of Scrofulides and Syphilides, R. H. Williamson, M.D.; Diphtheria, G. D. Wilber, M.D.; New Remedies, H. P. Wenzell, M.D.; Ovariotomy, Knut Hoegh, M.D.; Quackery, E. W. Bartlett, M.D.; Diabetes Melletus, Johnson Sperry, M.D.; Fistula in Ano, C. Linder, M.D., and instructive cases by Drs. Seiler, Hoegh, Palmer, Fox, Hunt, Meachem and Meacher; followed by obituary sketches of Drs .Marvin, Waterhouse, A. W. Lueck, F. V. Burroughs and James Cadell Davis.

Vaseline or petroleum jelly is one of the most useful substances for external use, ever brought to the attention of the medical profession. Being neutral, bland and unchangeable, as a mere lubricant, or as a basis in the preparation of ointments and liniments, it deserves to wholly supplant all animal fats and oils. And for the toilet, whether alone or in combination with aromatics, for the choicest pomades and soaps, it excels all other substances in elegance and exemption from injurious properties.

Phillips' **Palatable Cod Liver Oil,** and his **Milk** of **Magnesia** are the most elegant and acceptable preparations of these medicines made; they are rendered agreeable to the most delicate stomach. Their use is too well known for remark.

Louisiana State Medical Society Proceedings, 1879,* open as usual with Secretary's minutes and enrollment of members. Following this, in the absence of the President, Dr. J. C. Egan, the duty of giving the annual address devolved upon the Senior Vice-President, Prof. S. M. Bemiss, who improved the occasion by a timely and lucid address on the Objects and Aims of the National Board of Health.

This address of Prof. Bemiss was of great practical utility. The physicians, at least, thus being informed in advance, were well prepared for the effective work which followed in several places in the State, later in the season, in stamping out yellow fever.

Dr. L. F. Salomon submits a preliminary report on *Leprosy* in the State, giving a sketch of its history, existence, and treatment of about a dozen well authenticated cases. He concludes it to be a hereditary, and contagious disease, which requires prohibitory intermarriage and isolation as effectual means for its suppression.

State Medicine and Medical Organization is the subject of the annual oration, by Prof. S. E. Chaillé. This address was the basis of the excellent paper under the same title, by Professor Chaillé, before the section on State Medicine, American Medical Association, at Atlanta in May last, already reported.

Prof. Joseph Jones furnishes a remarkably well studied and comprehensive report on the *Comparative Pathology of Malarial and Yellow Fevers*, beginning at the beginning of yellow fever, in Louisiana, especially, so far as reliable records have been preserved, in 1796, and ending with the epidemic of 1878; and showing that "during a period of 62 years—1817—1878—the deaths from yellow fever alone numbered in New Orleans 41,829; and if the proportion of cases to deaths be estimated at six to one, then we have an approximate estimate of 250,974 cases of yellow fever in New Orleans, during a period of 62 years. . . .

During this entire period of 62 years, 1817—1878, inclusive, yellow fever was not merely present, but caused deaths in New Orleans every year, with the exception of 1821 and 1861.

If the disease was imported, it was annually imported, quarantine notwithstanding.

If the disease was always imported, it found no difficulty, at short intervals, of gaining a foothold, so that in the space of 62 years it swept off 41,829 victims out of a total mortality of 342,480 from all causes. . . .

* Proceedings of the Louisiana State Medical Association, at its second meeting, held in the City of New Orleans, April 9–11, 1879, with the Constitution and By-Laws. Pp. 206. New Orleans.

The immunity of New Orleans from yellow fever in 1863, 1864 and 1865, can no more justly be referred to the sanitary measures of the United States Government during this period, than to those of the city and State and Confederate Governments in 1856, 1860, 1861 and 1862, when New Orleans enjoyed an almost equal immunity from yellow fever, the deaths from this disease being in these years, respectively, 1859, 92; 1860, 15; 1861, 0; 1862, 2. We have no data to show the actual number of deaths amongst the Federal troops on land and water in and around New Orleans, 1863—1865; that yellow fever was present during this period, and that it *originated de novo in the port of New Orleans* is well established.

Dr. Elisha Harris, in his article, '*Yellow Fever on the Atlantic Coast and at the South during the War*,' established that 'Yellow fever visited twenty-five vessels in the fleet anchored in the river in front of New Orleans during the summer of 1864, and that the disease appeared first, namely, as early as September 12th, in vessels that had been for a long time anchored there. Filthiness, crowding, excessive heat and moisture, and utter lack of ventilation and lighting together with the stagnation of the local atmosphere of these oven like boats, incident to anchorage in a tideless stream, constitute the leading facts relating to the infected vessels.'"

Dr. M. Schuppert furnishes a paper on *The Cure of Oblique Fractures of the Thigh-bone Without Shortening.* Dr. D. R. Fox a paper on *Topography of the Parish of Plaquemine and its Medical History*, and Dr. E. L. Day, of Texas, a brief paper on *Magnetism as an Anæsthetic in Surgical Operations.*

Kansas State Medical Society Transactions, thirteenth annual session, Atchison, May 13—15, 1879, pamphlet, pp. 117, contains, besides the address by the President, Dr. C. C. Furly, and oration by Dr. T. Sinks, on medicine in general, contains: Papers on the *Treatment of Fractures*, by Dr. J. M. Carpenter; *Atelectasis*, Dr. C. P. Lee; *Nephritis*, Dr. B. Woodward; *Puerper Convulsions*, Dr. G. W. Halseman; *Recent Advances in Chemistry*, Dr. J. B. Gish; *Uses of Chloroform*, Dr. R. Morris; *Recent Advances in Ophthalmology*, Dr. B. E. Fruer; *Chronic Dislocation of Hip and Aneurism of Aorta*, Dr. C. V. Mottram; reports on *Practical Medicine, and Anæsthesia*, by Drs. W. B. Carpenter and W. W. Cochrane; report of *Cases*, Dr. W. L. Schenck.

Index Medicus should be taken by all physicians who value time, and who would be posted in medical literature and scientific progress: *A complete index monthly* of current medical literature and collateral sciences. Edited by John S. Billings, Surgeon U. S.

Army, and Dr. Robert Fletcher, M. R. C. S. Eng. $6.00 per annum. New York: F. Leypoldt, 13 & 15 Park Row.

Sanitary Engineering, by William Gain, C.E., Member of North Carolina Board of Health, is a pamphlet of eighty-six pages, giving much information on cleanliness, drainage, water service, etc., useful to all persons in the protection of their own, and the promotion of the public health, excepting "the *complex* system of *water sewerage*, which is now regarded as the best . . . " p. 54. The last word in this quotation should read the *worst;* and the tacit recommendation of water meters, as a restraint, p. 50, is also, bad. Water should be free as air to all communities, and sufficiently abundant to admit of the utmost facilities for using it. Raleigh: P. M. Hale and Edwards, Broughton & Co., State printers.

The National Quarterly Review, with the January number, enters upon a new career, indicative of prosperity and vigor. It is permanently enlarged by thirty-two pages, and promises hereafter the names of the contributors in each number, and of this, as follows: "Rise and Fall of the Bonapartes," by William Dowe. "The Management of the Indians," by Rev. W. E. Copeland. "English Classics," by May F. Miller. "The Hygiene of Water," by David A. Gorton, M.D., the editor. "The Working-Classes of Europe," by David Ker. "The Nebular Hypothesis," by David Trowbridge, A.M.; "Interstate Extradition," by J. Manford Kerr. "The New Eastern Question," by David Ker. "A Southerner's Estimate of the Life and Character of Stephen A. Douglas," by Hon. James D. Waddell, and a very full department of "Reviews and Criticisms."

The fourth article, on the "Hygiene of Water," by the senior editor, Dr. David A. Gorton, will well pay perusal. It shows a comprehensive reading on the subject, and very clearly presents the general conclusions of the best observers, on the dangers of impure water. The writer commits a grave error, however, in indorsing the popular theory that whisky—or any of its congeners—is antidotal to impure water. On the contrary, the danger is aggravated thereby. The only safe course in suspicious drinking water is *boiling* it, and then the less of anything added thereto, for satisfying thirst, the better. *The Review* is published at 51 and 53 Maiden Lane, New York, $4 a year.

Foreign Exchanges.—*Gazeta Medica de Lisboa:* Dr. Pedro Francisco da Costa Alvarenga, Redactor Principal, has a world-wide reputation, being a member of the most prominent medical or scientific associations in the world. Amongst others, of the Epidemiological Society of London, of the Medical Society of London, of the College of Physicians of Philadelphia, of the Conselho de Salubrid-

ade da Bahia, etc. With such associations, the *Gazeta Medica de Lisboa* presents a faithful and comprehensive view of sanitary science in Portugal.

Rivista Settimanale di Medicina e Chirurgia, published weekly, in *Pisa*, at the moderate price of 12 lire, payable yearly or semi-annually, in advance. A recent number contains an article from the *Bayerisch Intelligenzbl*, by Dr. R. Schwaab, on the Contagious Nature of Abdominal Typhus. The disease was introduced into the well-known asylum, Kreis-Irrenanstalt Werneck, the hygienic condition of which is excellent. Water supply, drainage, privy, general cleanliness, and all other conditions have been arranged with the greatest care. The disease was spread by the soiled linen among the nurses and patients in the vicinity of the patient suffering from typhus, and, when a new patient was removed to another part of the institution, the disease was propagated anew, and did not cease until it had invaded nearly every part of the establishment. The writer concludes that the disease is communicable from one person to another.

The same journal contains a complimentary notice of a paper read before the New York Academy of Medicine, on Alimentation per Rectum, by Dr. Flint. It is said that patients can be nourished in this way for two, and even three weeks. A case has recently come to the notice of the writer, in which the patient, suffering from severe gastritis, took nothing, in any form, into the stomach for five weeks precisely. The nourishment during this time was supplied exclusively per rectum. Also a notice of Dr. Fordyce Barker's paper before the *New York State Medical Society*, "On the use of Jaborandi, or Pilocarpine, in the Treatment of Puerperal Albuminuria and Convulsions."

L'Abeille Médicale, Journal de l'École de Médecine et de Chirurgie de Montréal, de l'Hôpital Hotel-Dieu, de la Maternité Ste. Pélagie et des Dispensaires. Rédacteur-en-Chef, Ths. E. d'Odet d'Orsonnes, M.D. This journal has been founded to antagonize *L'Union Médicale du Canada*, founded in 1872, to represent the Faculty of Medicine connected with the University of Laval. As will be seen from the title of the *Abeille*, and also from the prospectus of the "*École de Médecine et de Chirurgie de Montréal*," this institution claims the right to exclude the professors and students of the rival college from the hospitals and other public institutions of that city. As between the contesting parties, fiat justitia, ruat cœlum.

The August number of *L' Abeille Médicale* contains an interesting summary of the report of the "*Institution Chatholique des Sourds-Muets*," for the Province of Quebec, for 1878. This institution was founded in 1848, and incorporated by act of Parliament in 1873. Under the

management of its present able director, Rev. Alf. Bélanger, it has become the most important institution in the Province of Quebec. The number of boarders in the institution was, at that time, 74, although it is estimated that the whole number of deaf-mutes in the Province is about 1,100. This is not properly an asylum for this class of people, but an educational institution, intended to send out intelligent workmen, sons and fathers, worthy citizens and exemplary Christians, who will understand their duties and obligations to their fellow men.

Besides the sign language, the pupils are taught to articulate and to read; and some of them have learned to sing and to play an accompaniment for themselves on the piano. The superiority of the method of instruction followed in this establishment was recognized by the "Exposition Universelle," held in Paris, which bestowed a medal on the institution. The hope is expressed that Parliament will be more liberal at its next session, in giving the institution the means of benefiting a much larger number. The grant for the year named was $5,135.50, or about $70 for each pupil; this sum the *Abeille* compares with the amounts expended by other institutions for deaf-mutes:

In Virginia, $472 per capita; in Carolina, $350 per capita; in Iowa, $340 per capita; in Alabama, $325 per capita; in California, $631 per capita; in Province of Quebec, $70 per capita.

An arrangement has been made with the Rev. Director and the Professors in the Institution for Deaf-mutes, by which the École de Médecine will be able to show to the medical students the method of instruction adopted, and to explain the causes that lead to this unfortunate condition, and thus enable the graduates, in the future, possibly, to be of great service to their patients, when such conditions are met with. Why could not other colleges make similar arrangements, with advantage to themselves and to the public?

T. P. C.

Books Received. Beard's Nervous Exhaustion—Wm. Wood & Co., New York; Baltimore Annual Report of Health Department; Virginia Medical Society Transactions; Milwaukee Health Commissioners' Report; Pennsylvania Medical Society Transactions; Bureau of Education Circulars—1, 2, 3, 4 and 5, 1879; Prevention of Cruelty to Children—Society Report, 1879; Prevention of Crime—Society Report, 1879; Wight's Measurements of Heads, and Causes and Remedies of Suits at Law for Malpractice; Dix's Healthy Infant—Peter G. Thompson, Cincinnati; New Jersey State Board of Health Report; Wark's Prevention and Cure of Consumption—Author's Publishing Co; Hair: its care, diseases and treatment—C. Henri Leonard, M.D., Detroit.

THE SANITARIAN.

A MONTHLY MAGAZINE.

Vol. VIII. MAY, 1880. No. 86.

SANITARY REWARDS AND PUNISHMENTS.*

BY HON. HENRY W. LORD.

Scientifically there are no sanitary rewards and punishments, in the sense in which I may use those terms. I therefore commence this paper by striking out its title.

An oak favorably situated, and year by year rising and spreading upward, availing itself of all accessories to its growth, until it arrives at ideal perfection, under the operation of natural rules of order, cannot be said to be the recipient of sanitary rewards, nor can one adversely placed, making such progress as it may, with obstacles to encounter that stunt and deform its growth and abridge the duration of its life, be said to be the subject of sanitary punishments. The one flourishes in conformity to law with resources available, and the other suffers by alienation from necessary conditions or deprivation of support.

Something like sanitary rewards and punishments, however, result from the observance or violation of sanitary laws; but as rewards and punishments involve of necessity a consciousness of right and wrong on the part of the recipient, as well as a discrimination on the part of the power whence rewards and punishments emanate, and as it is maintained in this paper that sanitary penalties are inflicted and sanitary advantages achieved without the least regard to the moral qualities of the conduct that leads to them, the audience will, if it so please, permit me to use the words rewards and punishments in a sense dictated rather by convenience than technical accuracy.

I shall say little of sanitary rewards. If I shall succeed in sketching a view of sanitary punishments or penalties in such dark shades and deep shadows as will be necessary to delineate the background of the picture, then their contraries, or sanitary rewards, will take their places at their own suggestion and by implication in the foreground, and in such rosy tints as each auditor in his own fancy may envelop his idea of ruddy health, in the full flush of developing powers, pro-

* Read before the Michigan Sanitary Convention, Detroit, January 7, 1880.

gressing to the maximum strength and capacity of our race; even as the morning breaks out of darkness when

> "Night's candles are burnt out, and jocund day
> Stands tip toe on the misty mountain tops."

When we consider derangement in the natural economy of the human body, we find it bears some analogy to derangement in the order of action that may obstruct the operation of a machine such as man may construct to perform certain evolutions or achieve certain ends. The latter may be treated of as entirely independent of moral qualities.

In the former, that of the human body, disturbance of function or organism, may be very much involved with questions of morals; but nature notices the obstruction or disturbance only, and corrects or removes the one or the other, or in default of that, destroys the subject of it without any exception, and without the slightest reference to the moral quality of the action out of which the obstruction or disturbance arises.

If a steam-engine with its fire-box and boilers is selected for illustration it will be found that combustible material of a nature suitable to the purpose and according to the structure must be placed in the furnace in proper quantities and with a proper degree of continuity. If constructed for wood, coal will not produce what we will here call a healthy action, and would ultimately work destruction. If constructed for coal, wood in such quantities as it could take would not be sufficiently stimulating, and there would be chronic debility with other irregularity.

If fuel of too rapidly combustible nature, as gunpowder or dynamite, were used, the result would be too stimulating, so to speak, and immediate disaster likely to ensue. If the liquids consumed in the boiler were not in accordance with the organism, the proper motive power would not be generated; if impure water were used the surfaces of internal organs would be corroded or the passages walled up with obstructive secretions; or if the fluid be of the best, and it be expanded into steam too rapidly or in excess, damage or destruction would ensue from that source.

If all these things were properly adjusted, then the neglect of piston-rods, cylinders and journals, or the use of unfit materials for lubrication, would result in difficulties analogous to rheumatisms and inflammations, with ultimate decrepitude and dissolution. If, to strain the figure a little, we could for illustration fancy the engine, for the time being, a sentient creature, able to select its own combustibles and other materials, manage its own steam-gauge, and it were to use coal when constructed for wood, or wood when constructed for coal, or were to fill its furnaces with indigestible, that is to say, with incombustible material, as stone or brick or earth, or if it were to use for steady diet tallow or tar or rosin, or were to swallow powder or dynamite, or permit its steam to rise above the limit of its strength, or were to use liquids that would obstruct or corrode its inner surfaces, then the same damage or destruction would ensue as in the case first supposed, nor would it make the slightest difference in the imposition of these penalties whether the engine exposed itself to them by accident or design, or through ignorance, or whether any or

all these dangers were forced upon it by some agency to which it might have been subject, or which it could not resist.

The law of its organization would only take notice of the fact that its conditions were violated and the penalty would be inflicted. Nor would the law of its structure take the least notice of the reputable or disreputable character of what the engine might be doing at the time; whether it were forging guns to arm traitors, or dressing lumber to build a church, would in no way aggravate or palliate its non-observance of the law of its own being, nor render the punishment more or less certain or severe.

The human machinery—I trust you will for the sake of argument pardon the expression—is, apart from what is generally understood as moral obligation, amenable to a law of its own, a law which, if violated, offers no opportunity for escape. The wrong done may be corrected, though not without loss, and so much of the penalty as shall not have been inflicted may be withheld. It is no avail to deny the fault, no advocate or attorney can be employed to bewilder the judgment that imposes the penalty, no jury can be selected, either on account of its wisdom or its ignorance, to agree or disagree concerning it, no witnesses can be bribed or intimidated to misstate the facts, no question of insanity, emotional or otherwise, can be raised. No evidence of general good character will avail, no matter whether the conduct be voluntary or involuntary on the part of the offender, or whether he be engaged at the time in conduct as toward other laws creditable or infamous, if he violate the organic law of his own structure, the act is unlawful and unconstitutional as to himself and his posterity, and the punishment is absolutely assured.

In contending for obedience to the law of our organization physically, let me not be understood as holding it paramount to laws which include the regulation of conduct in relation to more enduring interests. The moral law is above the purely physical, but runs concurrently with it so far as the latter reaches, and then goes on with its sanctions into eternity.

There are some well-defined borders between the two codes, though in their antecedents and in their consequence they may largely involve each other. If the moral law commands, "thou shalt not kill," the mandate takes notice only of the person who kills, and is indifferent to the person killed. The physical law, on the contrary, is indifferent to the person killing, and only takes notice of the person killed. The moral law is interested in the moral turpitude of the act—the physical only takes knowledge of bones broken, or lacerated tissues that violate its own requisitions and executes final judgment in death.

When the moral law says "thou shalt not steal," it deals only with the thief, and does not regard the person stolen from. The physical law may or may not take notice of him who has suffered the loss, but if the robbery is such as to cause him to starve, then it does, and under its laws he suffers, perhaps dies. If in the first instance, that of killing, the violation of the natural law was by accident or in self-defense, through ignorance or insanity, it would not in the least mitigate the offense or for a moment stay the judgement. On the contrary, if the killing takes place under the latter circumstance, the moral law denominates it justifiable or excusable.

Within the last few days, and while preparing this address, I have read in the newspapers three different accounts of loss of life from small boats on Sunday. The first a party of irreligious boys on a pleasure excursion; second, a party of devout young people crossing a little bay to their village church for worship; third, two persons, perhaps physicians, on an errand of mercy or necessity to the sick.

There are large numbers of people who will comment only on the first of these occurrences, and it will be regarded as if by special direction of the Great Author of moral obligation; or if the other cases are pondered and remarked upon they will be characterized as mysterious dispensations, involving apparent anomalies in God's providence, but only apparent on account of our limited knowledge of His ways.

However involved the conditions as they may appear to us, and numerous as may be supposed the shades or degrees of moral quality in the intents and actions of the different sufferers in the general loss and without proposing anything whatever from a moral or religious point of view, I may say this as applicable to all of them, that the natural law has to notice but the single circumstance common to the parties, and that is their inextricable submersion in an unnatural element, and consequent inevitable death.

The foregoing involves truisms almost too obvious for statement. The principle implied holds true throughout the following supposed cases, which, though supposed, are actually true as to facts, and exist more or less open to observation all around us.

In a pleasant and luxurious home, such as some of you know, a case like this may be found: There is a young daughter of the house, a girl to whom you are warmly attached. She is 15 or 16 years old—at that period of maidenhood where, according to Longfellow, the brook and the river meet; affectionate and the exemplar of all virtues, she is beloved by her father, as was fair Ellen of the Lake by the Douglas when he shed tears upon a duteous daughter's head that would not have stained an angel's cheek. The mother, a woman of feeble constitution, and some weakness by inheritance, died a year or two after the daughter's birth. The young woman is undersized for her age, has little color in her cheeks, and her lips lack freshness and fullness. She is studious, too much so, and devoted to music beyond her strength. Her eyes are wonderfully expressive and a little convex. She wears glasses that blend so prettily with her features as almost to atone for their necessity. Her intelligence and general information are startling to older persons. She is not only perfect in her lessons, which extend to several languages, but is a great reader of fiction and current literature, while she also finds time for the standard and classic authors, ranging in stately costume on the shelves of her father's library. She was unlike other children, never cared for recreations, and has lived in-doors. Her father was never strong, and his affection for his daughter is intensified by her close resemblance to her mother. He will live quite a number of years, perhaps, to past middle age; she will probably die at 20, or earlier, or if she lives much longer there will be an arrest also of intellectual power, and physical and mental failure will take place together.

The moral law will make its record of the case, and so will the san

itary or physical. The parties are unconscious of offense against either. Conscience, the prompter of reproach as to moral delinquincy, has suggested no fault. As to the natural law, whatever violation has occurred, at least in the present and preceding generation, has not only been through ignorance, but as was believed by the parties through praiseworthy conduct.

Let us observe another case, common, but perhaps less common than the other. A girl a year or two older—her father has disappeared—he had the mark of syphilis inherited and acquired—her mother's constitution was also impaired. The girl was born, we will say, at the Wayne County Poor House, where twenty others similarly circumstanced were born the same year. There were no bonds of wedlock in the girl's family to hold it together. Her mother also died soon after the daughter's birth. She emerged from the alms-house at 5 or 6 years old and fell among thieves, grew up under bad influences, and without ever having heard of chastity became unchaste.

The diseases of her class had their taint in her blood when she was born, and they had been reinforced by her manner of life. She, too, was very much like *her* mother.

The young woman has lately died in hospital. Sweet sisters of charity, with crucifix pendant at their girdles, waited upon her with soft hands, and in gentle tones invoked for her pardon and comfort in the name of the blessed Mary, mother of Him who has compassion on such as she.

The moral law has made its record of this case also, and so has the physical; how widely apart in the former, how many pages between; and yet in the latter in their consequences how closely allied the two cases, inasmuch as they in violation of sanitary laws tended with the same certainty, and in about the same time, to the final penalty of death.

The sanitary law has held its scale with even balance over both processes, indifferent alike to the virtue in the one or the vice in the other. By widely separate approaches, both in their way unlawful and equally fatal, there has been during two or three generations in each family a pathway pointing to and followed steadily down to death.

In the first case, notwithstanding the alienation from normal conditions, and consequent deterioration that had taken place in the two generations immediately preceding, if the girl had not been taught to read until 6 years old, and then limited to proper intellectual application; if without excess of reading she had been encouraged to such physical exercises as her constitution required; if she had been taken from the piano stool for one-half of the time she occupied it and placed on horseback she would have had an appetite for food, been larger in size, developed in form, and might not have been near-sighted. She would have lived longer, and if it had been her fortune to have married into a healthy line of descent she would have borne children through whom in the next generation, if their marriages were also healthy, nature would have perhaps restored the alienated forces, and a vigorous line have been re-established.

In default of any intelligent attempt in her behalf in the last opportunity afforded, the inherited and acquired debility became fatal, and the particular branch of life she represented was stricken off.

So in the other instance, notwithstanding a particular taint in the blood which nature resents with more tenacity than any other, if the girl had been virtuously reared and her physical system had opportunity to contend with its pre-existing deteriorations, with such advantages as thorough sanitary surroundings would have given her, she, too, might have lived and married, and, if with a healthy person, borne children, and nature would have had an opportunity to correct in that generation and the next the wrong done in the preceding. All favorable conditions being absent and replaced by those of a tendency to continue and aggravate the alienation from sanitary processes, the deterioration as in the other case is complete and the line perishes.

Nature in each instance has obliterated the deviating line, as she always does, when no conservative measures interpose to correct it. All morbid deviations from sanitary conditions have a tendency to further deterioration, and there is a point at which it must be final.

"What," asks a profound medical writer who recognizes a physical failure as always antecedent to mental alienation, "are in reality the asylums for the insane but the concentration of the principal degenerations of the human race?" The same writer adds: "Man, created to attain the end appointed by Infinite Wisdom, cannot do so unless the conditions which insure the permanency and progress of the race be more powerful than those which tend to deteriorate and destroy it; and some cases of incurability against which the physicians' best efforts are shattered, are but the fatal termination of a series of anterior existences morbidly summed up and represented in one doomed individual."

As I have before intimated, the downward progress and final catastrophe are often delayed or averted by intermarriage of the weak with the strong during successive generations. This is, of course, not for the advantage of the strong, and nature does not recommend it in that direction. When it takes place, however, in the interest of the weaker, not as to sex but condition, nature accords the benefit or withholds it in proportion to preponderance of tendency.

Although the illustrations used apply to all conceivable cases transgressing sanitary laws, I will add another: Two young men, concerning whom all things are equal as to bodily condition, and as to predisposing elements by inheritance, start out together. The one, with praiseworthy desire to achieve great ends, devotes himself to more work in study or otherwise than his system, under the privations to which he subjects it, can endure. Taxing his energy in still greater ratio as his strength fails, his appetite is lost, his color fades, until at last he is about ready to commence the duties he has destroyed himself to prepare for, his faculties of both mind and body give way, and he dies upon the threshold of the busy mart of commerce or temple of learning or of worship into which he had sought to enter.

The other, allured by all the temptations that beset youth, and resisting none of them, takes no heed to his way, exhausts his strength in the same length of time and is disgraced. The friends of each weep over their loss; and while those of the former are consoled by the purity and loveliness of the character so prematurely overshad-

owed in death, yet it does not occur to either party how much, in a sanitary point of view, they owe their losses in common to alienations from essential conditions, which, though differing in kind, took the same direction and were equally fatal.

The process of nature in divesting the tree of life of deformed, enfeebled or fruitless branches, when such have passed beyond probable restoration, is conservative of the species, and were it not the rule, general deterioration of the race would be certain, and the limit of its duration rapidly approached. Indeed, it would long since have disappeared from the earth.

If two seriously impaired constitutions join in family relation, though they may live by mutual kind offices and good nursing to something like old age, yet their offspring will barely survive the age of child bearing, and if they again shall marry husbands or wives of a similar degree of deterioration the probabilities are against their having children; but if they have them, they will be defective in one or more ways and develop the abnormal conditions inherited, often with variations and exaggerations, and die before maturity.

Nature will have cut off the descending line, or, to borrow an expressive phrase, have stamped out the product of digression from her laws. Every depreciating tendency of this kind arrested obviously raises the average tone of the public health and develops progress to higher ends.

This paper has only undertaken to deal with the most general principals, and these in merest outline. A subject for thick volumes cannot be even indexed in the brief time during which I may hope for your attention here.

Some good will have been accomplished if I shall be able to direct public notice to the general fact so well known, and by many so little considered, that nature has cut for sanitary laws a channel of their own, and no exemplary conduct under other regulations will afford the least safety to one who shall attempt to move counter to the current as it flows onward in obedience to the eternal fiat of Him who has for the good of His children fixed the conditions and directed the way.

A knowledge of this has its resulting obligations; they are innumerable, and embrace the whole conduct of life, not to the exclusion of but in harmony with moral obligations. They include man's duty to himself, the circumstances of his marriage, the care of his children; and they include the duties of municipalities, and States and nations, out of which have grown such organizations as boards of health, and other precautionary and corrective associations. These have in view all questions of quarantine, contagion, sewerage, ventilation, infection, which, neglected, may some of them form alliances and project a plague to which the innocent and the guilty may be alike exposed.

There are great calamities which, with our present knowledge, we may not be able to contend. Often the pestilence so walketh in darkness that its footsteps cannot be traced except by the cries of its victims. Hurricanes, also, devastate districts, sweeping down habitations and enraging the seas, scatter indiscriminate death by land and water, irrespective of merit or condition. Earthquakes not only "topple down steeples," but sometimes

"Smack their mumbling lips
O'er a thick peopled city."

Men are not wholly selfish either as to themselves or the generations in which they live. The patriot soldier forfeits his life to perpetuate that of his nation; in the very article of death his vivas ring out with "long live the republic;" the statesman labors to provide constitution and laws that will give endurance to his country; the Christian father, as he attaches value to his creed, seeks to transmit it free from error or defect to his sons and daughters—physicians are always on the alert for sanitary discoveries that may improve the present age and reach forward to coming generations.

The indications are that our race is still progressing physically in the direction of its maximum possibilities; the average duration of life is a little extended; plagues appear at longer intervals and are less severe; contagions have been made amenable to human control. The movement is very slow, because the gods grind so slowly and so exceeding small. But comparing centuries with centuries we obtain observations that demonstrate the progress and make it seem worth while to live; while the immense advance in mental and mechanical attainment of itself implies a healthy direction in sanitary condition.

It must continue to be the duty of the boards of health to keep up the onward movement, so that in the voyage of life the fleet, freighted with all our great worldly interests, shall not lose steerage way, because if permitted to go astern or drift otherwise the time will come when the soldier with feeble knees shall lean on his musket for support in an uncultivated and barren land, statesmen and politicians, imbecile or insane, will dissolve into dust in conventions, like the horse shay on the road, attenuated preachers will stretch out thin hands over congregations of lost bodies, dyspeptic and morose; and physicians, themselves cadaverous, will have for patients the public in a decline.

A military engineer, estimating the course of a projectile, has first to calculate what would be its force and progress if moving in vacuum; he then considers the atmospheric conditions through which it must pass, and the degree of the earth's attraction that must ultimately bring it down.

The physician in calculating the progress of the public health has first to consider what would be life's average duration were all things favorable to longevity. He has not all the advantages of the engineer, because the obstacles are more complex and variable in action, the atmospheric effects are not so nearly equal, and the earth's influence not so uniform as gravitation, though equally certain to bring the body down at last. He can only approximate the positive truth and apply his learning to a comparison of probabilities with facts, learned and treasured up by his contemporaries and those who have gone before him, a series of observations out of which science is slowly evolved.

The writer of this paper having no professional learning and little science, with no exact and complete knowledge of anything, may perhaps represent the average condition of the people who look to such learned doctors as have called this Convention, that they may so direct us, not only as to our public safety, but as individuals, that we may hope to escape the necessity of their more particular and professional personal services.

THE SEWERAGE SYSTEM OF DETROIT.*

BY W. F. CRAIG, C.E.

The city is admirably situated for the water transportation, and disposal of sewage, being on the bank of a river of great volume and rapid current, and with the surface of the ground rising gradually to a height of thirty-five feet, at the northwest, and fifty feet at the northeast corner of the city, except at Jefferson Avenue, where the rise is a little more abrupt to a height of about twenty feet. The soil and sub-soil are generally an impervious clay, interspersed with pockets of quick-sand.

The area of the city is 13 1-10 square miles, of which about 6 square miles are sewered and drained completely by means of public and private sewers—4 miles by public sewers having grates placed in the lower portion of the streets, and the remainder partially by means of road ditches running to sewers. There are 72 7-10 miles of public sewers, ranging in size from a 12-inch pipe to an 8-foot cylinder, with a depth of 6 to 42 feet, and having grades from 1 inch to 3 feet per 100 feet. Also, 90 1-2 miles of lateral sewers, averaging about 9 feet in depth, with grades generally of 1 foot in 200 and usually 15 by 20 inches wide. The sewers built by the Board of Public Works are egg-shaped and the brick work is probably as good as that of any other city.

Mr. Craig quoted Rawlinson on the importance of house drainage and ventilation to the effect that main sewers and house drains should remove all solids, sediments and flacculent matter from the sewage, and that the safety and comfort of the inhabitants will depend more upon the proper arrangement and perfect construction of house drains, water-closets and sinks than upon main sewage.

Detroit has an ordinance to prevent solid materials from entering sewers, but it is not enforced to my knowledge. We have also an ordinance requiring that all private drains be constructed under the supervision of the engineer; but I am informed by Mr. Ruehle, of Board of Public Works, that the Council rescinded it. At any rate it is not enforced. The sanitary police have charge of that branch of the city service.

No provision is made for inspecting lateral sewers by means of lamp-holes or man-holes, or for their ventilation or flushing, except in some instances where street grates or receiving basins have been connected with them. Where such connection has been made I have not heard of their clogging from that point to their outlet, but I understand that from their dead ends to about the middle it is usual for them to be more or less filled with deposit, which is caused by the manner of supplying them and lack of provision to flush them out; also, that traps when placed between the vault and lateral sewers have not operated successfully more than six months, with very few of them now in use. This leaves an opening for sewer gas to rise.

---

* Abstract of paper read before the Michigan Sanitary Convention, Detroit, January 7, 1880.

Laterals having no defense are in some places well supplied with sticks, stones, bricks and other solids, and I estimate that of Detroit's ninety miles of lateral sewers fifty miles are elongated cesspools and the remainder is scarcely better. It is of the highest importance that some means be taken to ventilate and flush them as well as to regulate the connections made with them.

In speaking of public sewers Mr. Craig says that the construction of some of the older ones was very deficient, being laid with dry bottoms, and the top arch grouted or laid in common lime, which has since been dissolved or worn away, and are now much out of shape, as may be seen in Randolph and Riopelle Streets, and, I presume, in all the sewers built at that time. Also those rising the hill at Jefferson Avenue and Fort Street at a very steep grade, making them from that point too high to effectually drain many of the deeper cellars, as well as having numerous depressions which allow sediment to accumulate. This is the case in nearly every sewer in the city; but among the most foul may be mentioned those in Labrosse Street, Seventh Street, Fourth Street, Lewis and Second Streets, and Second Street below Michigan Avenue, the old grand sewer, and the Randolph Street sewer. The deposit reaches eighteen inches in depth, and in some instances more. There are numerous shorter places of the same kind in other sewers and at all the outlets.

Among the peculiarities of the sewers in this city is their manner of connection. At Seventh Street and Michigan Avenue a sewer three feet nine inches by five feet discharges into a three foot cylinder ; at Fourth Street, south of Michigan Avenue a four foot cylinder discharges into a three foot cylinder ; at Eleventh Street outlet there are received the Seventh, Ninth Avenue and Twelfth Street sewers. In my judgment it is not too large for Ninth Avenue alone. The grand sewer receives the Cass and Shelby Street sewers and is of smaller section than the Cass, besides having an outlet impeded by water pipes eight inches in diameter running directly through the sewer. This is also the case with the same sewer east of Woodward Avenue, six pipes passing through at different places. Nearly every sewer connects at right angles and often on steep grades, rendering the clogging at the receiving sewer the worse. At Third and Canfield Streets the sewer curves up stream to make as near a right angle connection as possible. At the corner of Beaubien and Fremont Streets and McDougall Avenue are curves that would do credit to a snake. They must be seen to be appreciated.

Sewers that were built as far back as 1836 have been found inadequate to carry off the water, or too shallow to drain the cellars. Attempts have been made to relieve them by connections which constitute such a labyrinth of sewers that it would puzzle one to tell where certain rainfall enters the river. I should doubt the utility of running a sewer from Crawford Street to Ninth Avenue through Locust Street to relieve the former when Ninth Avenue has an insufficient outlet for itself, besides depriving Fourth Street sewer of its water and making it the foulest sewer in the city, without providing some means to flush it. The same might be said of the Labrosse Street sewer from Fifth Street to Ninth Avenue, only the connection of Labrosse Street is so low at its outlet that it contains about eighteen inches of water that I think most persons would prefer to see at a distance.

I should also doubt the healthfulness of tapping the old Grand River Street sewer by Cass Street sewer and leaving it open to be flooded or back-watered, allowing the matter to settle, and on the receding of the water becoming a first-class gas machine. I should also doubt the utility of spending a large sum of money for a cut-off for Randolph, Brush, Beaubien and Antoine Streets in Woodbridge Street, when the same sewers at Fort Street east are only about eight and one-half feet deep, and when by extending the cut-off up to about Gratoit Avenue, where the ground is higher and the sewers have more depth, we can utilize the sewers above that point and devise others suitable to the requirements of the points below.

Every outlet in this city is inefficient for the capacity of the sewer leading to it, being nearly or entirely submerged, which allows water to back into them 200 or 300 feet. This also permits sediment to settle in them and to give off dangerous gases, and also chokes the outlets. Taken with their right angle connections, I judge that they will not carry within thirty to fifty per cent. of what they should do and were calculated to do. This is a very important item when we consider that they will not carry freely and without flooding as much as is demanded of them.

Lately, side main-holes have been constructed in all the deeper sewers, for the purpose of making a cheaper connection for receiving basins and lateral sewers, giving the water a dead fall of three to twenty feet, vaporizing the sewage and preventing an inspection without a bath when there is any water flowing into them. In several instances main sewers are connected the same way, as may be seen at the corner of Woodbridge, Beaubien and Antoine Streets, Russell and Grandy with Fremont, Locust and Crawford, Griswold and Grand River, and at Randolph and Woodbridge, while a five-foot cylinder discharges directly into the eight-inch receiving sewer with as much as seven feet fall, notwithstanding the sewer was intended to drain four other sewers back of it. I think it is a disgrace to any one having anything to do with it.

Mr. Craig also spoke in no equivocal terms of the utter lack of ventilating or flushing sewers in Detroit, and gave some valuable statistics concerning rainfall and the size of sewers necessary to carry it off. In conclusion he remarked: "It looks to me as though Detroit has made some expensive blunders in burying her sewers under water, without having sufficient height before connections are made to prevent their flooding in severe storms."

———o———

Care for the Minister.—A Glasgow minister was recently called in to see a man who was very ill. After finishing his visit, as he was leaving the house, he said to the man's wife: "My good woman, do you not go to any church at all?" Oh, yes, sir, we gang to the Barony Kirk." "Then why in the world did you send for me? Why didn't you send for Dr. MacLeod?" "Na, na, deed na; we wouldn't risk him. Do ye ken it's a dangerous case of typhus?"

AMERICANS AND THEIR CIVILIZATION A PRODUCT OF THE CLIMATE.

BY C. HOWARD YOUNG, HARTFORD, CONN.

Dr. Eduard Reich, one of the most celebrated hygienists of Germany, in his new and important work entitled "Studien über die Volksseele,"* has a chapter treating of climates and the profound influences they exert upon the moral and physical qualities of men, and speaks therein of the great difference existing between the English and the Americans, although they are of the same race. He ascribes this to the contrast of the climates. In order to bring more light to bear upon the subject, he cites the opinions of two of the most eminent climatologists of Europe on the effects of climates in general; on the side of Germany, Dr. Max von Pettenkofer (known widely from his researches on the cholera, having been sent about ten years ago to Gibraltar by the Bavarian government to study this terrible malady); on the side of France, Dr. Prosper De Pietra Santa, author of a dozen or more eminent works on climatology and hygiene, and at present editor of the Paris "Journal d'Hygiène et de Climatologie."

The first, in a work entitled "Beziehungen der Luft zu Kleidung, Wohnung und Boden; Relation of the air to Dress, Dwelling and Soil" (Brunswick, 1872), makes a comparison between the amount of heat which the organism loses in breathing dry air and that lost by breathing damp air, and also between the loss of heat caused by breathing cold air and that caused by breathing warm air. He gives the following deductions:

Man loses at	0	degrees of warm and dry air		293,040	units of heat.
" "	30	" " "		174,050	" "
			Difference:	118,990	" "
Man loses at	0	degrees of warm and very damp air		265,050	units of heat.
" "	30	" " "		105,390	" "
			Difference:	159,660	

With the dry air more heat is lost and more created, in consequence the circulation is quicker and more intense, life is more energetic, there is no opportunity for the excessive accumulation of fat or flesh, no possibility for the development of a phlegmatic-melancholy temperament, but, on the contrary, there is laid the foundation of that nervousness which characterizes the inhabitants of the United States.

On the side of France, as I have already stated, Dr. Reich quotes the opinion of Dr. Prosper de Pietra Santa: "Essai de Climatologie,

* "Studien über die Volksseele," von Eduard Reich, Doctor de Medicin, leg. Director und Vice Präsidenten der Kaiserlichen L. C. Academie, Redacteur der "Athenæum," Jena, 1876.

Thèorique et Pratique," page 160. The deduction is essentially the same.

As a simple observer, I can certify the exactness of the observations of these three authorities, Reich, Pettenkofer and Pietra Santa, as far as they apply to my own country.

The dry air with us produces nervous, energetic, large jointed skele-, tons, which have little or nothing in common with the stout, fresh, rosy. phlegmatic inhabitants of the mother country. Not only is the physical resemblance lost in the second generation, but the mental also, and ideas especially Britannic give way to ideas peculiarly American, the product of the climate, the soil and habits caused by these two factors.

Dr. Büchner, of Vienna, known throughout Germany as Kraft und Stoff Büchner (being the celebrated author of "Mind and Matter," a work translated into all the principal languages of Europe) passed, about a couple of years ago, some time amongst us, and, in a series of articles written for "Die Gartenlaube" (a weekly literary and scientific journal, published at Leipzig, and the most popular of its kind in Germany), says : The Americans are tending Indianwards, that is to say they are advancing towards the Indian type. The learned Viennese professor observed this resemblance not only in the face and form, but also in the gestures and movements. Although my countrymen are, doubtless, but little flattered at the deductions of this university professor, it is certain that there is some truth in his view and that the inhabitants of the United States are assuming more or less the type and character of the aborigines.

A. Mühry ("Klimatographische Uebersicht der Erde in einer Sammlung authentischer Berichte mit hingefügten Anmerkungen," 1862, Leipzig and Heidelberg), in his work on climatology says : "The climate of America in general is excessive in point of dryness. The evaporation is much greater than in Europe, nearly twice as great at New York as at White Haven (England), that is to say as thirty to fifty." These figures are sufficiently eloquent.

The climate of England is precisely the contrary to that of America, and, in consequence, the two nations live under very different conditions, hence the divergence of temperament. The Americans and the English are the living expressions of their respective climates.

According to Reich, "The air of America is much too dry for the Anglo-Saxon race, in point of heat too excessive ; from this results the exaggerated nervous activity, the excesses of the national character and the mad chase after the material things of this world."*

Another German author, Prof. Dr. Carl Reclam, editor of "Die Gesundheit" (No. 24, 1876, Leipzig), says :

"The air of heights, on account of its lightness and dryness, favors extraordinarily the evaporation or exhalation from the human body.

"Outside of heights we find the like only in America, where, as is

* An English author's judgment as to the religious condition of the people is on the whole unfavorable ; and he remarks that, "the keen pursuit of wealth, the tendency to estimate everything by its marketable value, the restless and feverish activity which prevail on every side are unfavorable to the higher life of the intellect and the spirit."—"American Pictures," Rev. Manning, London.

well known, in the neighborhood of New York, the air is so dry that wooden objects brought from Europe crack from this cause. There is also an electrical tension observed which is not to be found in Europe. The descendants of the Dissenters, who emigrated two hundred and fifty years ago, are changed bodily and mentally. Besides lean, lank bodies, long necks, and rough, dry hair, they display nervous irritability, feverish activity and haste—in short, mental peculiarities, traces of which may be seen with us by a careful observer during a dry northeast wind."

Proverbs are the expressions of the daily life of a people. "Time is money!" If in the United States one demands of a gamin, no matter how small, what time is worth, he will not make of it a question of metaphysics, but will lisp, Time is money!

Go ahead? Yes, but hold back also! The one represents the radical modern element, the other the conservative. The one represents acquisition, the other conservation; both are well, but according to circumstances. The first represents more particularly America, the last England, and, we may hold, that both are the results of the respective climates.

Dr. Nathan Allen (National Degeneracy, *The Medical Times and Gazette*, London, 1871, p. 341) said that the Americans of Anglo-Saxon descent were degenerate English. They are not English at all; the fact of their being different does not necessarily imply degeneracy! That the English are physically superior, a disinterested observer might perhaps allow. But there is no intellectual superiority on the part of the sons of Albion. With the one, predominance of the muscular system, with the other of the nervous; a patriotic New Englander would say: With the one nation it is predominance of physique, with the other of brain, in fact, matter *versus* mind. In his patriotism he would perhaps mistake sickly nervousness or increased nervous action for intellectual superiority.

If a comparison of the mental qualities of the two nations were to be made, American women should not be excluded. The women of New England are perhaps the best educated in the world, and take precedence in this respect of their fair cousins in Old England, yet the latter are superior in beauty of character.

Ferdinando Napoli, now Deputy and formerly Under-Secretary of Public Instruction in Italy, living under the same roof as myself at Florence, observed to me "that when the women of Italy were on an intellectual level with those of the New England States, Italy would resume amongst European states its due place."

Relative to physical beauty, our American women possess merely beauty of face, almost never of form. Unfortunately, the drying, irritating effects of the climate and of American life cause the early loss of even this. The English women, besides beauty of face, possess beauty of form (as well as character), and keep both to an advanced age.

Without discussing Dr. Nathan Allen's view, I would say that the question of moment is not what we are to-day, but what we shall be to-morrow. We are called to a great future, but at present an impartial observer must acknowledge that we are a nation passing through a crisis. We have survived a terrible civil war, settling the vexed ques-

tion of slavery, which George Washington, in his day, had not the courage to face, and the future is rosy in promises. As Americans, we should all be glad that the Union stood, but as humanitarians, as believers in the grand principles of democratic institutions, we should be thrice so. I have lived amongst peasants in France, Italy, Switzerland, Austria and Germany; nine years or more I have studied the lower classes abroad, and amongst them I have ever heard America spoken of as the refuge of freedom and justice, "where rich and poor stand equal in light of freedom's day." If they invest capital in our "business enterprises" they, unfortunately, come to view the United States in a new light and to become cognizant of the fact that smartness and dishonesty are too often synonymous terms. (*The Pall Mall Budget*, October, 1876, London, says of American smartness: "Smartness is a pretty thing in its way, but you can't make a national idol of it without paying a little sum in sacrifices.") Then, too, if one investigates the question, one finds that though liberty, equality and fraternity exist, they have not precisely the significance usually attached to such high-sounding words. One is apt to find that liberty means the right to put the hand dishonestly in state, municipal or private funds; that equality means pulling down those above one; and that fraternity means immoral political combinations, absence of correct views on *meum et tuum*, and fraternal division of spoils.

Amongst the aristocratic, and often, too, the professional and mercantile classes on the continent, one hears the United States mentioned in far from flattering terms. Aside from any *caste* feeling, this is natural. The peasant class know us more intimately. Every peasant or workman, for instance in Germany, has a relative, or, at least, a friend in America, who, partial to his adopted country—and the American dollar—writes back in glowing terms of the new world. Now the best classes, as a rule, know us only through the press, more or less hostile, perhaps, in general tone. The criticisms on our public life are, unfortunately, but too often well grounded. Those knowing us through the European press, or, indeed, through our own, let us say particularly through our own, must come to the conclusion that we are morally a degenerate nation, and yet the conclusion would probably be false. It would not be fair to judge us as a nation by our representatives, state or federal (national), for, as a rule, our masses are better. Heaven forbid that the Knights of the Order of Back Pay should serve as patterns of the nation. At home, we all understand to-day that the profession of a politician is not, as a rule, honorable, and that men of high character and unbending principle generally prefer keeping out of the equivocal throng at national or state capitol. If, however, from real patriotism, men of worth enter the political arena, they are apt, naturally, to be worsted, not by better men, but by those more cunning and unscrupulous. Perhaps, in a new future, we shall look to principle rather than party, to the man rather than the politician; then this race of parasites at national and state capitol may disappear, and Europeans will not have the idea that we are a dishonest people.

The *Saturday Review*, August, 1876, of London, believes that the corruption amongst public men in the United States could be done away with by a judicious and general elevation of salaries. The ad-

vice, though it may be good, sounds like another form of bribery ; in other words, we say to our honorables: Do not steal, we will pay you to be honest. Are we to suppose, then, that honesty exists only when there is no incentitive to dishonesty ?

We are, in America, in a state of transition ; the foreign elements which we daily receive keep us in, so to speak, a state of fermentation. According to statistics, given by the New York *Times* of January 1st, 1874, more than 267,000 emigrants arrived at the port of New York alone during the year of 1873. The heaviest emigration ever recorded was in 1874, when the total at New York was 294,581. (The emigration at New York is more than seventy-five per cent. of that of the whole country.) From 1874 there was a steady decline down to 1877, when the minimum of 54,536 was reached. In 1878 there was an increase of 20,000. For 1879 the figures indicate that the emigration reached about 160,000. Up to October 1st, the Germans took the lead with 24,218 ; the Irish came next with 16,658 ; finally the English with 12,313.

These are new elements which have to be assimilated. When this work of digestion—one may say—is complete and one nation formed of all, then we may invite judgment and criticism.

Dr. Reich, the eminent editor of the *German Athenæum*, says: "It is useless to judge of a country while such a stream of emigration from Europe overturns customs and ideas. There will be nothing homogeneous while such a state of things lasts, and it is certain that it will do so as long as European governments organize systematically man-hunting *en masse*, instead of seeking to enlighten the people by compulsory education and taking the general sanitary measures necessary to improve their physical and moral state."

Even American authors have said that the Americans of Anglo-Saxon descent were dying out ; that our women, more particularly in New England, were sterile, and that our fair country would, at no very distant date, become the heritage of foreigners.

This is merely Darwinism applied to the United States. The addition of the blood and sinews of Europe cannot harm us, far from it ; physiology and history teach us that the fusion of nationalities, when not differing too widely, is successful, as a rule. If, however, in this peaceful struggle, the Anglo-Saxons disappear, emerging into the Celtic and Germanic elements, we may accept it as retribution. By theft, murder and treachery, with such necessaries as fire-water, gunpowder and Indian-Agents, we gained possession of "our heritage," cultivating it by keeping in bondage, with the Bible in one hand and the overseer's whip in the other, millions of our fellow-beings. The red man is disposed of, but his persecutors may pass away as completely, if not as gloriously, as the descendants of the Five Nations.

THE PHYSIOLOGY OF THE TURKISH BATH:

Being an Experimental Inquiry into the Effects of Hot Dry Air upon Man.

BY WILLIAM JAMES FLEMING, M.B.

With the exception of a paper in the *Lancet* of May 20, 1876, by Dr. J. C. Bucknill, and another read by Dr. Cameron at the meeting of the British Medical Association in 1877, all accounts of the Turkish bath have been confined to general descriptions of the details of the process, and of the sensations experienced during its use. Except in these papers I can find no record of any attempts to measure with scientific accuracy any of the various powerful effects which it is universally acknowledged to produce upon the bodily functions. In the hope of determining by experiment the exact action of hot dry air upon man, I have for several years carried on a series of observations.

I presume that my readers are all acquainted with the details of a Turkish bath. If not, there are many books from which they can be learned—notably that by Professor Erasmus Wilson upon the subject. Suffice it to say, that the essential part of the process consists in the immersion of the body in dry air at a temperature varying from 130° F. to 200° F. for a considerable time (half an hour to an hour generally), and subsequent douching with cold water. The accessories of shampooing, &c., are non-essential.

Our power of tolerating very great heat, provided the air is dry, without injury or inconvenience, has long been known. Indeed, Drs. Forsyth and Blagden more than a century ago submitted themselves to a temperature of 260° F. (127° C.) without great inconvenience.

All the experiments were made upon myself, invariably before dinner, say 4 to 6 P. M., and about two hours after lunch. They were performed in the spacious bath of the Arlington Swimming Club, Glasgow; and I may here mention, for it is an important factor, that this is heated by Constantine's system, which consists in an arrangement of stoves by which a constant current of pure air is drawn from the outside atmosphere, heated by passing through a species of oven, and driven into one of the apartments of the bath with such force that it traverses the whole suite of rooms, parting with some of its heat in each, and ultimately passing out from the last into the air. By this means not only is the air for breathing, but also the air in contact with the skin, constantly renewed, so that a layer of watery vapor does not, as in all baths heated with stationary air, soon cover the body and convert the bath into a vapor one. The freedom from all feeling of oppression, even at very high temperatures, experienced in a bath thus heated is the best proof of the excellence of the system.

The temperatures at which the experiments were conducted were generally an initial heat of about 170° F. for a few minutes, to produce diaphoresis rapidly, followed by a subsequent temperature of about 130° F. during the remainder of the time spent in the hot rooms. This, I believe, is the best system for habitual bathers, as perspiration being once freely established in the hottest room, is kept active by the lower degree of heat.

What I set myself to investigate was the effect of immersion in this hot dry air—

1. Upon the amount of material eliminated from the body in excess of the normal.
2. The alteration produced in the temperature of the body.
3. The influence upon the pulse rate.
4. The influence on the respiratory rate.
5. The alteration in the composition of the urine.
6. The composition of the sweat.
7. The arterial tension as shown by the sphygmograph.

We have now to consider the modes of making the experiments under each of the above heads, and the results obtained.

WEIGHT.—First, as to the amount of material eliminated from the body in excess of the normal. It is evident that to estimate this it was necessary to ascertain the exact weight before and after the bath, and the quantity of water drunk during the time. For this purpose I employed a beam turning with ¼ oz. when loaded with 3 cwt., with which all the weighings were done.

As the time occupied by the experiments varied considerably, I have in the following table reduced the totals to loss per minute :

TABLE I.

Experiment.	Actual loss in Ounces.	Drachms.	Total time in minutes.	Loss per minute in Drachms.	Grains.
1	60	0	60	8	0
2	38	6	55	5	38½
3	22	4	30	6	0
4	35	0	55	5	5½
5	24	4	40	4	54
6	24	0	40	4	48

This gives an average total loss of weight of 34 ounces 1 drachm in an average time of 46 minutes 40 seconds, that is an average loss per hour of 44 ounces—per minute of 5 drachms 53 grains.

The amount of water drunk averaged 4 drachms 44⅐ grains per minute, so that the excess of loss over water comsumed is 67⅐ grains per minute.

Seguin calculates the average normal loss by skin and lungs as 18 grains per minute.

Now, all this material must have been removed either by the skin or lungs, no doubt by both, and I fear it is impossible to estimate how much passed off by each of these channels. However, it is a fact of great importance to know that by these two channels can be eliminated in an hour more than 44 ounces of the constituents of the body—not much less bulk than is normally excreted by the kidneys in 24 hours.

No doubt the amount of the solid constituents is much smaller, although by no means inconsiderable; nevertheless, even if we consider what is lost as pure water, it is obvious that the interchange of such a quantity of fluid in the economy must produce, or at least determine, important metamorphoses. In fact, the process may be fairly considered as a washing of all the tissues of the body from within outward.

TEMPERATURE.—Next, as to the effect upon the temperature.

The estimation of this presented some difficulty, as it is obvious that the thermometer employed must all the time be rigorously enclosed in the body, and no part of it ever permitted to come in contact with the hot air. To effect this there seem only two means available, its insertion into the rectum, or its retention in the closed mouth. The necessity of walking from a cool room into a hot and back again militated strongly against the first of these situations, so I had an instrument constructed of a U-shape, originally with the intention of placing it on the floor of the mouth, with a leg on each side of the frenum of the tongue. When the instrument was in this position it was found to produce such discomfort that I was obliged to use it lying in the cheek outside the jaws. In this position all the readings were obtained. The thermometer was set, put in place, and the mouth closed in a cool room, the hot room then entered, the mouth being kept rigorously shut, and breathing being carried on by the nose until, after the lapse of ten minutes, the cool room was again entered, and the thermometer read and noted. In this way as far as possible I avoided the direct action of the hot air on the thermometer, and I do not think that it can have been much affected either by the heat passing through the cheeks or from the nasal cavity. It is possible, although I tried to avoid this, that some small quantities of heated air may have entered the mouth from behind and affected the instrument. However, the regularity of the results obtained in many experiments militates against the probability of this source of error having produced much effect. The chart gives the average of a number of observations.* I do not, however, vouch so much for absolute as relative accuracy of the figures, since from the peculiar construction of the thermometer it is probably not to be entirely depended upon. As the amount of alteration, rather than the actual temperature, is what we wish to discover, this is of less moment.

Thus we have a rise of 3.7° F. produced by the bath, and this highest temperature was always reached at the end of 50 minutes. On the few occasions on which the experiment was prolonged to 60 minutes, a tendency to fall during the last part of the time was observed.

It is worthy of note that in the experiments described by Dr. Bucknill and Dr. Duckworth Williams, the rise of temperature observed was 1.7°, and as the period of immersion in the cases recorded by them was always very short, this coincides exactly with my own observation at the end of 10 minutes. As in Dr. Cameron's observations the whole of the thermometer was not enclosed in the mouth, I think the higher temperatures he obtained are probably due to direct heating of the instrument.

PULSE.—The pulse follows much the same course as the temperature, but the variations are greater. Especially did the rate before

---

* The Chart is omitted. The number of observations was 19, at intervals of five minutes. Average normal temperature .....97.65° F.
" rise at end of 10 minutes 1.06
" highest point 101.03
" after bath.....97.02 [Ed.

the bath vary on different days. Besides, the effect of thirst was observed to be an acceleration of the pulse-rate, which again fell after water was drunk. This was probably due to the reflex effect of the cold water, and perhaps somewhat to the irritating action of the too highly concentrated blood upon the heart.

The following chart shows the average of many observations.*

The rise in the pulse-rate during the first ten minutes was a little over 13 beats. The maximum, 116, was, as in the case of the temperature, attained at 50 minutes, after which a slight fall took place. After the douche the return was nearly but not quite to normal on the average, but in one case it was as much as 14 lower than before the bath. On this occation the initial rate was high. I will again refer to this in considering the ratio subsisting between the pulse and respiration rates.

Respiration.—In the paper in the *Lancet* referred to above, Dr. Bucknill's chief conclusion is that the rate of respiration is diminished during the stay in the hot rooms. Up to a certain point I have been able to confirm this result, as the following average chart shows.†

Here we have a marked fall as the first effect, followed by a steady rise to a point higher than the initial, and after the bath a fall to near the number previous to the bath. This does not altogether coincide with the results recorded by Drs. Bucknill and Duckworth Williams in the paper referred to. They give the average diminution in the respiratory rate as 4·2, which closely corresponds with my result, namely, a diminution of 4 ; but they make no mention of the subsequent rise which I always found. This is probably due to the short time they kept their patients in the bath. They, besides, merely state that the observations were taken during the profuse perspiration, and not the time after entering the hot room. The average rates of pulse and respiration before the bath were in my observations—pulse, 79·4 ; respiration, 22·5. That is a ratio of 2 to 7, somewhat higher than the normal. At ten minutes the rates were—pulse, 92·5 ; respiration, 20·8 ; a ratio of 2 to 8·8, which is nearer the normal ; at fifty minutes, 115·5 to 25·4 ; a ratio of 2 to 8·6. The well-known difficulty of not altering the rate of breathing when counting it yourself may have introduced error into these figures, but on several of the occasions medical friends counted for me. Their estimations nearly coincided with my own, except in the initial rate ; and as my own result was abnormally high, I have in the above calculations adopted theirs.

Sweat and Urine.—As the mutual relations of the constituents of the sweat and urine excreted during the bath are the most important parts of this branch of the investigation, they will best be treated together. The method adopted for procuring the sweat was the enclosure of one of the arms in an india-rubber bag, confined round the shoulder by elastic bands, and furnished with an exit tube, closed by a clip. By this arrangement about 2 oz. sweat could be collected

* Twenty at intervals of ten minutes. Pulse rate : 116, 114, 112, 110, 108, 106, 104, 102, 100, 98, 96, 94, 92, 90, 88, 86, 84, 82, (before bath) 80, (after bath) 78.

† Seven observations at intervals of ten minutes : 26, 25, 24, (after bath) 23 (before bath) 22, 21, 20.

during an ordinary bath. The urine was passed immediately before entering the bath, and again after complete cooling. The sweat thus collected was found to have an average specific gravity of 1006·3, and to be faintly alkaline or neutral. The urine after the bath had a greater specific gravity (12° of urinometer) than before the bath.

I have to thank Mr. W. J. Mackenzie for the careful chemical analyses he has made of these fluids. From the small quantities I was able to place at his disposal, the estimation was necessarily confined to the principal constituents—chlorides and nitrogenous substances —which we presume to be urea. For the first of these the process he adopted consisted in evaporation with a little nitrate of potash, ignition to destroy organic coloring matter, and precipitation with silver nitrate.

The urea was estimated by Russel and Wert's hypobromite solution.

The mean of his results stated per thousand is given in the following table:

TABLE II.—SWEAT AND URINE. IN 1000 PARTS.

	Urine before bath.	Sweat.	Urine after Bath.
Chlorides	5·68	6·05	3·65
Urea	17·61	1·55	19.18

From this we see that the sweat contained more chlorides than the urine before the bath, and nearly double the amount present in the urine secreted during and immediately after the bath. Whether the abnormally small amount of chlorides existing in the urine (not much more than half the amount given by Vögel as normal) influenced this or not, further experiments on different individuals will be required to ascertain, and whether this diminution of the urinary chlorides, after free action of the skin, has any bearings on the well-known reduction in their amount which is found in pneumonia and other acute diseases seems worthy of clinical investigation.

The urea, on the other hand, follows a very different course. We have a considerable quantity in the sweat, and an increased amount in the urine secreted during and after the bath. The existence of urea in the sweat is doubted by many physiologists, and out of the three principal analyses of this excretion by Favre, Shottin, and Funke, Favre finds only 0·044; Shottin, none; Funke, 1·55, per 1000. The absolute identity of the latter with Mr. Mackenzie's result is interesting.

The amount of urea in the urine before the bath is about normal. The increase in the urine after the bath is probably due to increased density of the fluid, and the high temperature which the body reaches —a temperature like that of fever.

BLOOD PRESSURE.—The difficulty of obtaining sphygmographic tracings in the bath was greater than I expected. I did not venture to expose a Mareys sphygmograph to the heat and moist handling necessary; besides, I doubt if it is possible to manipulate the smoked papers properly under the circumstances. The Tambour sphygmograph, which I devised some years ago, gave some fair results, but even it was difficult to manage, and the effect of the heat on the in-

dia-rubber membrances may have somewhat altered the tracings. However, I think we are justified in concluding that for the first ten to fifteen minutes the force of the heart beat is increased, and that after immersion for about twenty minutes it becomes feebler. This is shown by the diminished height of the tracing. The rounding of the summit and decreased distinctness of the dicrotic notch seem to point to an increase of peripheral resistance, and perhaps to the injection of a smaller quantity of blood into the vessels at each ventricular contraction. The condition of the circulation seems to be a great dilatation of all the superficial vessels, and therefore a diminution of the quantity contained in the heart and deeper trunks. This probably produces a faster action of the heart, as the observations on the pulse show actually took place ; but it appears to the author that the necessary result of great capillary dilatation is increase, not, as usually supposed, diminution of peripheral resistance. No doubt the opposite condition, capillary contraction, causes an increase of peripheral resistance from the greater difficulty of forcing the blood through the narrowed channels ; but in the case of dilatation, the vessels contain an immensely greater mass of blood, and this mass must require a greater expenditure of force to set it in motion, so that increased peripheral resistance may arise as well from excessive distension as from contraction of the capillaries. It is probable that up to a certain point this is counterbalanced by the greater facility of flow from diminution of friction, but I conceive that when the increase of the capacity of the capillary vessels is large, and extends over a wide area, the opposite effect is the more likely to accrue. This, then, is the condition brought about by the hot air, in my case at least.

The trace after the bath was absolutely normal, while that obtained before the bath was one of decidedly low tension.

Conclusions.—To sum up, it has been shown that a very large quantity of material can be eliminated from the body in a comparatively short time by immersion in hot dry air, and although the greater part of this is water, still solids are present in quantity sufficient to render this a valuable emunctory process.

The temperature of the body and the pulse rate are markedly raised.

The respiration falls at first, but afterwards is less influenced than would be expected *primâ facie*.

The urine is increased in density, and deprived of a large portion of its chlorides, while, if anything, an increase in the amount of urea is produced.

The principal effect upon the arterial tension seems to be an increase produced by the greater rapidity of the heart's action combined with the dilated, we may almost say gorged, condition of the capillary circulation.

From these conclusions we may deduce the following practical observations as to the use of the Turkish Bath in medicine :

Its most important effect is the stimulation of the emunctory action of the skin. By this means we are enabled to wash, as it were, the solid and fluid tissues, and especially the blood and skin, by passing water through them from within out. Hence, in practice, one of the most essential requisites is copious drinking of water during the sweating.

The elevation of the temperature, and more especially of the pulse-rate and blood-pressure, point to the necessity of caution in cases where the circulatory system is deseased.

Excessively long duration of the bath seems to produce more or less depression, as shown by the fall of pulse and temperature after fifty-five minutes. It is probable that the time at which this occurs varies with individual idiosyncrasy. In my case it is accompanied by a distinct feeling, which I can only compare to satiety.

The great use of the bath seems to be the power it gives us of producing a free action of the skin in persons of sedentary habit, or suffering from disease interfering with fluid excretion, and by its means I believe considerable elimination of morbid matter may also be brought about. Besides, and along with this, it is an efficient means, if resorted to sufficiently early, of relieving internal congestion, on the same principle and with much greater certainty than the usual diaphoretics; and in rheumatoid affections not only does it act in this way, but by the relaxation of muscles permits of passive movements, rubbing, &c. (shampooing), exercising a much greater influence than they would independently exert.—*Journal of Anatomy and Physiology.*

———o———

How Venice is supplied with Fresh Water.—Entering a little square, shut in by high houses, and, like most Venetian squares, dominated by the unfinished facade of a time-stained church, I noticed a singular activity among the people. They were scurrying in from every alley, and hastening from every house door, with odd-shaped copper buckets on hook-ended wooden bows, and with little coils of rope. Old men and women, boys and girls, all gathered closely about a well-curb in the middle of the square: and still they hurried on, until they stood a dozen deep around it. Presently the church tower struck eight, and a little old man forced his way through the crowd, passed his ponderous iron key through the lid and unlocked the well. The kettles went jangling into it and came slopping out again at an amazing rate, and the people trudged off home, each with a pair of them swung from the shoulder. The wells are deep cisterns, which are filled during the night, and it is out of amiable consideration for those who love their morning nap that they are given as good a chance as their neighbors of getting an unsoiled supply. It is the first instance that has come to my notice of a commendable municipal restraint upon the reprehensible practice of early rising. Few, very few, of those who came for water had had time for their toilets. Their day evidently begins with this excursion to the public reservoir. Later in my walk I saw a cistern being replenished. A barge filled with water lay in a canal near by, and a steam pump forced the supply through a hose to the square, where a gutter carried it to the well. The water is of excellent quality. It is brought in conduits from the Euganean hills, near Padua, but its distribution through the city is carried on in the original manner indicated. For a city where the salt sea is the scavenger, where ablutions are not *de rigueur*, and where water is not a beverage, the cost of laying distributing mains has wisely been spared.—Col. Waring, *Harper's Magazine.*

DISINFECTION. *

Recent experiments made under the direction of the International Cholera Commission have shown that the ordinary methods of disinfection are inefficient, and, in practice, they have often failed to arrest the spread of infectious diseases.

As it is impossible to experiment directly upon the *unknown* low organisms, which are thought to be the means of transporting the various infectious diseases, the effects of chlorine and sulphurous acid were studied upon *known* living organisms; the probabilities being thought to be in favor of the theory that complete disinfection should destroy at least all known forms of life, although it may be true that the tenacity of life of the infective matter of various diseases differs, just as the degree of cold necessary to put a stop to yellow fever is much less than that required to arrest the spread of cholera.

Chlorine and sulphur fumes, in sufficient quantity, were found to be efficient in killing insects, fungi, bacteria and infusoria; the objections to chlorine in houses being that it is more costly; that its use is more difficult, and that it destroys metals, textile fabrics and colors.

The burning of ten grams of sulphur for each cubic meter of air-space, tightly closed, was found *not* to kill bacteria, infusoria, or all insects; twenty grams, however, were proved to be sufficient for that purpose. One volume of water, when saturated at 59° F., absorbs thirty-seven volumes of sulphurous acid—enough to kill all the low organisms found in putrid urine.

The following articles were found uninjured after several hours' exposure to an atmosphere in which twenty grams of sulphur had been burned to every cubic meter of air-space: a clock of steel and brass; rusty and clean nails; gold and silver money; a military epaulet; various colored silk articles; a colored rug; calico; down-pillows; a gilt-framed looking-glass; books; water in an uncorked bottle; flour; meat; salt; bread; apples; cinnamon; vanilla; cigars; wall-paper; oil paintings; varnished articles; gas-fixtures; water-fixtures; a highly polished razor had a slightly cloudy appearance on its upper side, but that was easily rubbed off. The flour and meat were cooked and eaten, and the cigars were smoked, without any abnormal taste or smell being observed; in the bread not all of the observers noticed a slightly acid taste; the inside portion of the apples was unchanged, the skin was slightly sour; the water, after standing, had an acid reaction, but no decided taste or smell. Litmus paper placed between the leaves of books and under the carpet was turned bright red. Many of the articles exposed had a decided smell of sulphur at first, but that soon disappeared.

The experiments seemed to show that clothing, bedding and other articles may be disinfected without being changed chemically or injured; and it should be added that practically this method has apparently accomplished perfect disinfection, as tested in Berlin.

---

* The Circular from the Massachusetts State Board of Health, from which we quoted editorially (March number), in calling attention to the insufficiency of the amount of sulphur commonly used for the disinfection of vessels.—EDITOR.

If we may judge from these results, effective disinfection, by burning sulphur, requires eighteen ounces to each space of one thousand cubic feet. The sulphur should be broken in small pieces, burned over a vessel of water or sand, so as to avoid danger from fire, and, if the room is large, it should be put in separate vessels in different places. The room should be tightly closed for six hours and then aired; it is better that the room should be warm than cold. Of course, efficiently disinfected air is, during the process of disinfection, irrespirable. Most articles may be disinfected in this way, if hung up loosely in the fumigated chamber, although it would be an additional safeguard to expose anything thick, like a bed-mattress, to prolonged heat at a temperature of about 240° F.; and, indeed, heat must, with our present knowledge, be considered the best disnfectant. With this end in view, local boards of health are advised to procure furnaces and laundries, as is commonly done in other countries, to be used for the sole purpose of disinfecting articles which have been exposed to the infectious diseases, as recommended in the Ninth Annual Report of the State Board of Health, and described by Dr. A. H. Johnson, in an exhaustive paper on Scarlet Fever (pp. 255 *et seq.*), in that report. Of course, a much simpler disinfecting furnace than that described will answer every purpose. For ordinary use, in disinfecting *houses*, the sulphur process is the best.

A solution of chloride of zinc (one part of Burnett's Disinfecting Fluid to two hundred of water), very quickly kills bacteria *which have been placed in it*, and arrests putrefaction. Caustic lime serves equally as well (1 to 100), but leaves a sediment not always easy to remove. Carbolic acid in sufficient strength to be effective (1 to 100) is more expensive and of disagreeable odor.

It is needless to add that "disinfectants" used in sufficient quantities to destroy bad smells do not necessarily kill microscopic living organisms; and it is not supposed that they directly influence the so-called "germs" of the infectious diseases, unless concentrated to the extent which has been mentioned.

Finally, fresh, pure air acts as one of the best "disinfectants" by enormously diluting the infectious matter, and, under certain conditions, including time, must render it inert to all effect, even if not quickly destroying it, as many think is the case.

STATE HOUSE, BOSTON, April, 1879.

———o———

Leaks in Gas Pipes.—To detect leaks in gas pipes, apply soap suds to the suspected leaky joint. The formation of bubbles will show an escape. This is safer than trying the joint with a lighted match. If the leak occur in the branch of a bracket or chandelier, it is repaired by soldering with plumber's fine solder; if it be a very small one, heat the piece first, with a spirit lamp, and fill the aperture with cement.

Courage is a wonderful agent in throwing off disease. A walk of five miles would cure many an occupant of the lounge. Will-power will surpass pill-power in nine cases out of ten, if not in every one. To hold a bottle of smelling salts in the hand on account of a headache may be just the thing, at times, but to fling a pound of fruit cake out into the alley, and then walk a furlong as a reward for not eating the compound, is nearly always a much better thing.

Keeping Flour Sweet.—The keeping properties of flour depend largely on the care bestowed upon the wheat before it reaches the miler's hand. The wheat should not be allowed to stand in the field exposed to drenching rains, or housed in a damp state. It is quite generally agreed that the bran of the wheat sours first, and the high grade flours, from which every vestige of the hull has been removed, retain their freshness longest. If wheat is perfectly dry when put into the bin or garner, it will keep a long time without "heating," but it will keep for a much longer time if stored where a current of fresh air is admitted. Flour will keep best in a cool, dry, airy room. In the summer, flour should not be stored either in a cellar or garret, but in rooms where there is a free circulation of fresh air. Flour should not be stored with grain or other substances which are liable to heat, as it has been known to spoil from being stored in contact with such articles.—*American Miller.*

Butter, Cream, Milk and Flour are peculiarly liable to absorb effluvia, and should, therefore, never be kept in mouldy rooms, or placed where there are sour liquids, aromatic vegetables, such as onions, cabbage and turnips, or smoked fish or bacon, or, indeed, any kind of food or thing of strong odor, lest they lose their flavor. But, alas, how much more essential is it that the utmost care be used in the prohibition of bedside food and drink in the nursery and the sick room : a practice fraught with constant danger to the sick, and of spreading disease to the well.

Game Pie.—Take pheasants or partridges, woodcocks or snipes, or a mixture of some of them ; bone and cut them up in convenient pieces, larding the breast pieces. Take the livers, parboil them, and chop them up finely with an equal quantity of cooked veal (lean) and of bacon ; then pound the whole in a mortar, adding during the process a small quantity of bread-crumbs soaked in stock, a little parboiled onion or shallot, pepper, salt, and powdered spices to taste, as well as some powdered sweet herbs ; also add a little fresh butter. When the mixture is thoroughly pounded, pass it through a hair sieve, and then work into it the yolks of one or two eggs to bind it. Make a paste with two parts of flour to one of butter, salt to taste, and as much water as is necessary to obtain a stiffish paste ; work it quite smooth, roll it out to a thickness of three-eighths of an inch, line a raised pie mould (previously buttered) with it, taking care to make it fit exactly; crimp the edges at the top with a paste cutter, then line the pie with slices of bacon cut as thin as possible, and proceed to fill it with the pieces of game, truffles, previously cooked in white wine, and mushrooms, cooked in lemon juice, filling up the interstices

with forcemeat. Be careful to pack the whole closely. Put on a cover of paste, make a hole in the centre, put a piece of buttered paper on the top, and bake about four hours in a rather slow oven. When taken out, pour in through the hole some hot aspic jelly. The next day take off the cover, and lay on the top a layer of bright aspic chopped up, not too finely.—*Caterer.*

Astor House Corn Bread.—One quart of buttermilk, two eggs, one tablespoonful of baking soda, two tablespoonfuls of melted butter; stir in meal until the mixture is about as thick as buckwheat batter. Bake in square tin pans, about an inch thick, half an hour in a hot oven.

Braising.—By this process more than mere "stewing" is, of course, intended. In braising, the meat is just covered with a strong liquor of vegetable and animal juices (*braise* or *mirepoix*) in a closely covered vessel, from which as little evaporation as possible is permitted, and is exposed for a considerable time to a surrounding heat just short of boiling. By this treatment tough, fibrous flesh, whether of poultry or of cattle, or meat unduly fresh, such as can alone be procured during the summer season in towns, is made tender, and is furthermore impregnated with the odors and flavor of fresh vegetables and sweet herbs. Thus, also, meats which are dry, or of little flavor, as veal, become saturated with juices and combined with sapid substances, which render the food succulent and delicious to the palate. —*Caterer.*

Cutlets of Venison.—A few lardoons; a sprig of thyme and parsley; two carrots; one onion; a little glaze; one gill of gravy. Cut the venison into nice shapes, and lard each cutlet; lay them in a stew-pan with the herbs and the vegetables sliced. When they are dressed, glaze them, and serve with sauce piquante.—*Caterer.*

A Funeral Dinner.—Repasts at funerals are sometimes gotten up ostensibly as refreshments to weary travelers from a distance, but at other times, apparently, with the purpose of increasing the number of sympathizing friends. One of this latter kind, we infer, has recently fallen under our observation. The post-ceremonial collation consisted of;—roast beef, boiled ham, baked pork and beans, preserved salmon, pickled oysters, fresh country sausage, baked potatoes, white and brown bread, doughnuts and two other kinds of cake, two kinds of preserves, cheese, apples and nuts; coffee and several other things, which a mourner, suffering with severe gastric derangement and sick headache two days afterwards, could not recollect.

Nicotine in her Smack.—I wonder how any woman who has ever kissed a clean man can go through the pretense of ever kissing a tobacco-chewer. Did you ever see one suffer the penalty? This is how she does it: There is a preliminary shudder, and then she sets her teeth hard, holds her breath, and makes a little pigeon dip at the foul lips of the grinning beast, and then, pale with horror, flies to the kitchen, where, if you follow her, you will find her disinfecting with soap and water. Many of the blessed little hypocrites pretend that they like the smell of a cigar, but even hypocrisy is powerless to force from a woman the confession of a fondness for hanging like the bee on a flower to a tobacco-worm's lips.—*Mrs. Garrison.*

Death-rates per 1,000 inhabitants, annually, from all causes; and from causes which are usually preventable. Condensed from report of National Board of Health Bulletin.

Mortality in United States.	Population.	Total No. of Deaths from all Causes.	Deaths under 5 years.	Annual Death-rate per 1,000.	Consumption.	Diphtheria and Croup	Diarrhœal Diseases.	Typh'd & Typhus F'rs	Malarial Fevers.	Scarlatina.	Yellow Fever.	Measles.	Puerperal Diseases.	Small-Pox.	Whooping Cough.
Atlanta.—4 weeks ending March 20th	39,000	42	16	13.1	7	....	1	....	....	....	....	....	....	....	1
Baltimore.—4 weeks ending March 20th	400,000	529	211	17.2	104	43	2	6	2	24	..	1	4	1	5
Boston.—4 weeks ending March 20th	375,000	620	219	21.3	117	47	13	10	1	2	..	1	2	..	14
Brooklyn.—4 weeks ending March 20th	564,448	850	335	19.8	146	74	5	3	16	23	..	19	15	..	12
Cambridge.—4 weeks ending March 20th	50,000	67	19	19.9	11	5	....	....	....	....	....	....	....	....	1
Charleston.—4 weeks ending March 20th	57,000	95	39	21.7	10	....	3	1	....	....	....	....	1	....	5
Chicago.—4 weeks ending March 20th	537,624	725	345	17.3	83	105	15	11	6	26	..	19	4	..	6
Cincinnati.—4 weeks ending March 20th	280,000	357	132	16.6	60	13	5	11	..	9	..	1	2	..	9
Cleveland.—4 weeks ending March 20th	175,000	228	108	16.9	19	23	1	1	2	29	..	1	4	..	6
Dayton.—4 weeks ending March 20th	39,000	47	10	15.7	8	4	1	....	....	1	....	....	1	....	2
Dist. of Columbia.—4 weeks ending March 20th	160,000	357	154	27.3	81	3	5	5	1	4	....	6	1	4	
Dubuque.—4 weeks ending March 20th	30,000	25	3	10.9	3	....	1	....	1	....	....	....	....	....	....
Erie.—4 weeks ending March 20th	30,000	38	7	13.9	4	6	....	3	2	....	....	....	....	....	....
Evansville.—4 weeks ending March 20th	37,500	63	27	20.7	10	4	3	1	1	10	....	....	....	....	....
Fall River.—4 weeks ending March 20th	48,500	92	22	24.7	15	....	....	....	....	13	....	....	....	....	....
Hudson Co., N. J.—4 weeks ending March 20th	199,000	322	141	21.0	47	21	6	5	10	..	....	8	....	....	1
Indianapolis.—4 weeks ending March 20th	97,000	110	39	14.3	13	4	1	1	3	8	....	3	1	....	....
Kansas City	61,000	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Lawrence.—4 weeks ending March 20th	40,000	59	25	19.2	13	3	1	1	..	1	..	2	....	....	1
Louisville.—1 week ending March 20th	175,000	59	29	17.6	8	....	....	2	....	....	....	2	....	....	....
Lowell.—4 weeks ending March 20th	52,000	101	42	24.3	23	8	2	1	..	5	..	1	1	....	....
Milwaukee.—4 weeks ending March 20th	124,000	167	87	17.2	16	35	3	3	1	3	....	....	5	....	....
Minneapolis.—4 weeks ending March 20th	52,000	69	27	15.0	6	4	1	....	....	....	....	....	1	....	4
Mobile.—4 weeks ending March 20th	40,000	37	8	11.7	10	....	1	1	1	....	....	....	....	....	....
Newark.—2 weeks ending March 20th	.....	92	38	19.1	15	6	1	3	....	....	....	....	1	....	....
New Haven.—4 weeks ending March 20th	60,000	94	40	18.6	10	5	2	2	2	9	..	7	1	....	6
New Orleans.—4 weeks ending March 20th	210,000	355	111	22.3	54	9	14	3	7	3	..	4	2	..	5
New York.—4 weeks ending March 20th	1,097,563	2,122	901	25.1	278	127	41	13	18	26	..	79	33	..	27
Omaha.—4 weeks ending March 20th	30,000	25	6	10.8	4	4	....	1	....	....	....	....	....	....	....
Philadelphia.—4 weeks ending March 20th	901,380	1,277	437	18.4	250	59	7	23	..	15	..	33	..	11	6
Pittsburg.—4 weeks ending March 20th	145,000	277	141	29.0	32	25	2	11	..	21	....	....	....	....	....
Providence.—4 weeks ending March 20th	101,500	150	44	19.0	27	4	....	3	..	30	..	2	1	..	5
Peoria.—1 week ending March 20th	40,000	10	1	13.0	1	....	....	....	....	1	....	....	....	....	....
Quincy.—4 weeks ending March 20th	35,000	47	22	17.4	3	1	1	....	....	1	....	....	....	....	....
Reading.—4 weeks ending March 20th	40,109	74	31	28.6	14	3	....	3	....	....	....	....	....	....	....
Richmond.—4 weeks ending March 20th	80,000	131	74	20.4	24	2	4	3	1	....	....	....	2	....	....
Rochester.—3 weeks ending March 13th	90,000	201	45	38.8	36	17	2	2	2	5	..	1	1	....	....
San Francisco.—4 weeks ending March 20th	300,000	362	103	15.4	56	4	3	7	3	..	3	3	..	1	
Savannah.—4 weeks ending March 20th	32,656	51	24	20.3	8	1	3	1	....	....	....	....	1	..	1
St. Louis.—4 weeks ending March 20th	500,000	446	178	11.6	63	12	14	8	9	1	..	3	4	..	9
St. Paul.—2 weeks ending March 20th	51,080	31	8	15.1	5	....	....	....	....	....	....	....	....	....	....
Utica.—3 weeks ending March 20th	35,000	30	6	14.8	5	....	....	....	1	....	....	1	....	....	2
Wheeling.—4 weeks ending March 20th	35,000	61	28	26.4	5	1	3	3	....	....	8	1	....	....	
Wilmington.—4 weeks ending March 20th	44,013	26	11	19.5	3	....	....	....	....	1	....	4	....	....	
Mortality in Foreign Cities.															
Antwerp	169,981	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Buda, Pesth	309,705	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Bucharest	211,380	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Bremen.—1 week ending Feb. 28th	105,000	36	....	17.9	....	....	....	....	....	....	....	....	....	....	....
Brussels.—1 week ending March 6th	399,482	171	....	22.3	....	....	....	2	....	....	....	....	....	4	..
Belfast.—1 week ending March 6th	212,000	117	11	35.9	....	....	....	5	....	....	....	....	....	4	..
Berlin.—1 week ending Feb. 28th	1,062,500	517	....	26.2	....	....	....	6	....	....	....	....	....	....	....
Christiania.—1 week ending Feb. 28th	113,000	47	....	21.1	....	....	....	....	....	....	....	....	....	....	....
Dresden—1 week ending Feb. 28th	215,440	89	....	15.7	....	....	....	2	....	....	....	....	....	....	....
Frankfort.—1 week ending March 6th	120,000	60	....	24.8	....	....	....	....	....	....	....	....	....	....	....
Glasgow—1 week ending March 6th	578,156	263	....	23.2	....	....	....	....	....	....	....	....	....	....	....
Havana.—1 week ending March 13th	195,487	122	....	32.6	....	....	....	1	....	....	7	....	....	1	..
Leghorn.—1 week ending March 13th	97,410	55	....	29.3	....	....	....	....	....	....	....	....	....	....	....
Leipsic—1 week ending March 6th	145,719	90	....	31.0	....	....	....	....	....	....	....	....	....	....	....
Lyons	342,815	....	....	....	....	....	....	....	....	....	....	....	....	....	....
London.—1 week ending March 9th	3,620,863	1,607	....	22.9	....	....	....	10	....	....	....	....	....	8	..
Liverpool.—1 week ending March 6th	538,338	256	....	24.7	....	....	....	5	....	....	....	....	....	8	..
Leith.—1 week ending April 13th	57,000	23	....	10.7	....	....	....	....	....	....	....	....	....	....	....
Montreal	135,000	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Paris.—1 week ending March 4th	1,988,806	1,200	....	31.4	....	....	....	....	....	....	....	....	....	....	....
Rouen.—1 week ending March 13th	104,902	99	....	49.2	....	....	....	....	....	....	....	....	....	....	....
Stockholm.—1 week ending Feb. 28th	169,429	103	....	31.7	....	....	....	1	....	....	....	....	....	....	....
Trieste.—1 week ending Feb. 21st	127,873	97	....	39.6	....	....	....	....	....	....	....	....	....	....	....
Warsaw.—1 week ending Feb. 28th	336,703	187	....	29.1	....	....	....	....	....	....	....	....	....	....	....

Editor's Table.

The National Board of Health and its Adversaries.

The National Board of Health, having asked of Congress the necessary powers for the exercise of the duties devolved upon it, has aroused opposition from the most surprising quarters. The first work of the Board after its organization last year, was the inspection of seaport quarantines and such recommendations and aid as appeared necessary to render them more effective against the introduction of yellow fever. This service was for the most part cordially accepted by the authorities, and there can be no question by those who had opportunity to form intelligent conclusions on the subject, that it greatly added to their efficiency. But attention was early diverted from it by the outbreak of yellow fever at Memphis, and the efforts of the Board for its limitation and suppression were exercised with a degree of skill rarely if ever equaled, and surely never surpassed in any age or country in battling with an epidemic, or, all things considered, crowned with more signal success. Fresh in the recollections of the previous year, the people were greatly alarmed, not only in Tennessee and the southwest, but throughout the country, and commerce and travel were on all sides placed at bay. Proclamations from the Governors of States contiguous to Tennessee, edicts by the civil authorities of inland towns and country districts, even of sparsely populated country villages, vied with one another in their interdictions against the people of Memphis, and some of them against the whole population of Tennessee. But with a directness of purpose which could only come of knowledge and determination, the National Board, and a corps of workers chosen for their known qualities, aided by the State and city sanitary authorities, took command and stood as a wall of defense between Memphis and the outside world. From first to last, blind and deaf to all clamors from within and without—to everything but a sense of duty which comprehended the welfare of the whole country in a season propitious for the worst possible ravages of yellow fever—the National Board hemmed it in and stood sentinel at all the outposts, and at no time forgetful or negligent of the necessities of the sick and dying, or of needful supplies to the constrained. A few persons there were who escaped, and who soon thereafter were arrested in their flight with the fever upon them. But every such case was eagerly pursued, overtaken and cared for,

and the communities in the midst of which such cases were found were protected and assured by needful measures.

In New Orleans, with a vigilance stimulated by the surprise at Memphis, the first case was promptly made known to the National Board, and in that city, as in Memphis, by the joint action of the National Board and the local health authorities, every case was made the centre of special and extended sanitation, so complete as to literally stamp out the disease. Moreover, here, in this hitherto regarded centre of infection when once aroused into activity, for the first time was instituted, by direction of the National Board, such measures of sanitation on board steamboats and other vessels, and such careful examination of crews and passengers before departure, as to effectually secure them against quarantine on arrival at their places of destination. To such a degree of security and public confidence did this work commend itself, that the Governor of Texas—while maintaining the most rigid quarantine restrictions in other respects—raised quarantine against New Orleans, conditioned on the certificates of the National Board's inspectors; and with such satisfaction to the merchants of New Orleans as to secure their unqualified approval for like action in the future, as a means of promoting commerce.

Such were the signal acts of the Board, demonstrating its power to cope with emergencies. Meanwhile investigations were undertaken and progressed of immense importance to commerce in other respects. Such as collecting information with regard to the sanitary condition of some of the principal cities and towns in the United States; inquiring into the sources of epidemics, especially of yellow fever; the hygiene of the mercantile marine and the best means of promoting it; the influence of various soils upon sanitation, with special regard to drainage and methods of disposal of excreta; of quarantines and inspection stations, with special reference to their situation in such places as would most facilitate commerce, with due regard to the protection of the public health.

With such a record for the first year, such work undertaken and such plans for the future, the Board asks of Congress appropriation to carry out its purposes and that—

"In the intervals of its sessions, its executive committee..shall make report to the President of the United States whenever any place in the United States is considered by it to be dangerously infected with contagious or infectious disease, and that, upon official publication by the President of such report, the transportation of goods or persons from such place into the State, other than that within such place is, shall be unlawful....unless carried on under the Rules and Regulations of the National Board of Health, approved by the President of the United States.

"These rules shall apply until the President shall proclaim such place no longer dangerously infected, and, in the meantime, the Board, or its executive committee, shall make weekly reports, in writing, to him, upon the sanitary condition of the place in question."...

To this request of the National Board for increased facilities for carrying out the purposes contemplated by the law creating it, the Board of Health of Nashville—the *capital* of *Tennessee*—objects!—objects on the ground that—

"It is calculated to inflict serious detriment to the commercial interest of a city, without compensating good. It would place the decision of a special case of disease in the hands of those who are at least foreign to the local welfare and prosperity, ignorant of the antecedents and surroundings. Furthermore, the enactment of such a law would give occasion to a conflict of opinion and authority in matters strictly medical, thereby retarding the progress of sanitary work, rather than fostering and encouraging it."

Based as this opposition is upon the primary importance of Nashville, or any similar city, as compared with the whole United States, and the assumption of superior knowledge on the part of any such local health authorities as compared with the National Board of Health and its agents, it is effectually answered by the foregoing sketch of the National Board's work in Tennessee last year and the work still in progress in that State, under the auspices of the Board for cleansing, draining and sewering Memphis, adding, only, that of the total expenditures of the National Board for all purposes during the year 1879, $154,002.42, no less amount than $48,645.78 was spent in Tennessee alone to keep yellow fever out of Nashville and other places of importance to the whole people of the United States.

Another effort in opposition to the facilities asked for by the National Board is being urged by Dr. Le Hardy, of Savannah, Ga., lest, in his superior patriotism, the Board may be given a "political influence that may be used to injure any section of the country;" and, in virtue of the local origin view of yellow fever, as against all such quarantines as he imagines the National Board would institute.

Forgetful of Savannah's yellow-fever history, and purblind to, or prepossessed in favor of the barbarous respect which the people of Georgia exhibited for Tennessee's State sovereignty in 1878, Dr. Le Hardy, like the Board of Health of Nashville, advocates the right to have and to hold epidemics at will; and to risk their propagation independent of any measures of safety, or interference by the National Board for the protection of other communities.

In 1878 the people of Chattanooga, in their own defense from yellow-fever, established a camp two miles out from the city; but it happened to be near the Georgia line, and the night following the Georgians, armed with shot-guns, marched over and burnt it to the

ground. It was afterwards re-established, however, and maintained by the same means which the Georgia people had used for its destruction.

A State's rights advocacy which has no respect for other States' rights; the right to inflict upon the country the barbarities of shot gun quarantines, and the liberty to spread contagious and infectious diseases at pleasure; and an egotistical self-sufficiency which logically leads to the right of maintaining nuisance, or of one's setting his house on fire without regard to the welfare of his neighbors, most of all needs, in case of an epidemic, some overruling central power which will be respected and maintained for the public welfare.

Among the conditions of the law creating the National Board of Health is: "That with the assistance of the Academy of Science...it shall report to Congress at its next session a full statement of its transactions, together with a plan for a national public health organization, which plan shall be prepared after consultation with the principal sanitary organizations and the sanitarians of the several States of the United States, special attention being given to the subject of quarantine, both maritime and inland, and especially as to regulations which should be established between State or local systems of quarantine and a national quarantine system." With the concurrence and endorsement of the Academy of Science and other organizations authorized by the law, the National Board has undertaken to establish quarantine stations at mouth of Chesapeake Bay, at Ship Island in Mississippi Sound, near Brunswick, Ga., and off Galveston; to aid several of the Southern quarantine stations, and to establish inspection stations for steamboats on the Mississippi River.

The quarantines and inspection stations contemplated are, without exception, in the interest of commerce in its broadest and best sense. The Atlantic and Gulf stations are to be so situated, arranged and equipped as to afford the utmost degree of convenience, safety and facilities for the reception, purification and dispatch of vessels and merchandise; the care of the sick; and the least possible detention of well persons, consistent with their own and public safety. These national quarantines will of course be no bar to port quarantines, such as the local authorities may see fit to maintain in their own behalf, but considering the superior facilities to be afforded by them, there is abundant reason for the belief that many of the port quarantines, with their onerous and doubtful taxes on commerce, such as they have hitherto imposed, will be rendered wholly unnecessary.

The inspection stations on the Mississippi are for a twofold purpose: to prevent unnecessary quarantine by practical sanitation on board steamboats, and for the interception of any case of quaran-

tinable disease at the outset or in transitu, ere it is introduced into any other place, or becomes dangerous to passengers and the boat.

Such, in brief, appears to be no less the object of the law creating, and the work of the National Board of Health, commendable alike for the promotion of commerce and the protection of the public health.

The Tenement-house Murderers of New York.—It is painful to record that the much vaunted prize plans for suffocating people in New York, and the amendatory tenement-house act of a year ago to correspond, have resulted as we heretofore ventured to predict,* in the continued, and, if possible, increased sacrifice of human life. Scarcely had our last number, reproaching the Association for Improving the Condition of the Poor for sympathy with the tenement-house murderers, reached the mails, ere a circular of "Extracts from the Secretary's Report to the Board of Managers, March 8, 1880," came to hand, with the statement that:

"Ninety-two tenement-houses have been reported to the health authorities as being defective in their sanitary appointments. The condition of these houses as stated in the returns of the visitors is shocking. In more than one instance, it is stated, the house is saturated with urine from the cellar to the garret, and one house, No. — Mulberry Street, the first floor may be said to be used for a common cesspool. And the repetition of the complaint of filthy yards, overflowing privies, damp walls and ceilings, broken balusters, broken windows, dangerous stairways, falling plaster, tap leaks, leaking roofs, no light, foul air, and so on, become sickening with the thought that human souls are born and bred within the walls of these dens of vice and of death.

"The condition of this house, said one visitor, is horrible beyond description; the odor from this house, said another, was so foul that I would not go in to see the family, as he had been especially asked to do. It is a hard duty, said a police officer to a visitor going over the tenement-houses of his beat, but, he added, with a generous sigh of sympathy, it will be harder for the man who comes after me, he will have so much more to do. Then there is no abatement of the evil, asked the visitor—no, was the reply, it is increasing."

But why the blank for number and owner of the Mulberry Street house? Does it belong to some member of the Association or some member's particular friend? and why is it not indicted as a nuisance, and the owners and abettors thereof for murder, as they should be?—and as they would be by the Society for the Prevention of Cruelty to Animals, if cattle instead of human beings were housed therein. For such structures in their places, there can be no improvement, no substitutes consistent with health but *turf*. It should be made the duty of the Board of Health by State and municipal law, to designate ten

* See THE SANITARIAN, Vol. 7, pp. 226-8.

such dens at least—ten of the worst—every year for a dozen years or more, until the reform becomes complete, to be wholly removed, and their places converted into breathing parks, by public assessment. The remunerative value to the city for such assessments would be manifold in the economy of health and morality, in the decrease of sickness, pauperism, vice, crime and funerals at public expense.

The New York City Court Rooms have been inspected by order of the Health Department, in virtue of the resolution taken notice of in our last number. Of the Tombs Police Court, in particular, Sanitary Inspector Roger S. Tracy reports:

"There are two prisoners' rooms adjoining and opening into the court room, one for males and one for females. These rooms contain each about two thousand cubic feet of air, and each often has thirty inmates. They have only one window each, which, in cold weather, must be kept closed, and so they are only ventilated through the doors into the court room. The women's room has a fire-place, but it is never used. When it is considered that the prisoners are chiefly of the most degraded and filthy class, that they have only about seventy cubic feet of air space for each, and that the rooms are practically not ventilated until they become empty, the state of the atmosphere in them can be imagined. I visited them about an hour after the adjournment of the Court, and the stench in them was frightful."

The Marine Court rooms were also found in bad condition, and particular mention is made of the filthy condition of the two parts of the Court of General Sessions.

The Special Sessions Court room is in a good condition as regards ventilation, but attention is drawn to the fact that neither the floor nor the carpet covering it has been cleaned for years. The Lower District Police Court is said to be in fair condition, and Dr. Tracy states that the Judge of the Court remarked to him pathetically that if the city would only furnish awnings for his two windows he would be contented with his quarters.

The Working Women's Protective Union, established sixteen years ago "for the relief and protection of working women, of whatever nationality, color or creed, from every species of oppression and wrong," is one of the most useful associations we know of. From the sixteenth annual report now before us, we learn that the "Union has answered 216,783 applications of various kinds; has supplied 38,320 employments; has prosecuted 6,757 cases of complaint; has recovered and paid to working women $22,066.60, out of which they would otherwise have been defrauded.

"The services of teachers, seamstresses, dressmakers and operatives in every branch of female labor, except household service, may be obtained through the medium of this Institution, for either city

or country, *entirely free of charge.* Inquiries and directions sent by mail to the Superintendent, at 38 Bleecker Street, New York, will receive prompt attention."

The Union has no resources other than the voluntary contributions of those who approve of this form of benevolence—which ought to be numbered by thousands instead of hundreds. Its officers and directors perform their several duties gratuitously.

The Society for the Prevention of Cruelty to Children (Fifth Annual Report, 1879) has been especially effective in good works in rescuing children from slavery to the "padroni," the check it has put upon child beggars in the streets, and selling liquor to minors. During the year, 233 cases have been prosecuted for cruelty, resulting in 199 convictions; 705 children have been placed in homes or institutions, and 297 been temporarily relieved and supplied with clothing. Four new Societies have been formed in other States during the year, making in all twenty Societies in this country, and two abroad, with similar objects. The Society is greatly encouraged by the widespread sympathy and generous contributions it has received in the promotion of its object. Office, 50 Union Square, New York.

The Society for the Prevention of Crime, in its third annual report, for 1879, shows considerable progress in its excellent object, by spurring up the vigilance of the police, and furnishing evidence against unlicensed grog-shops, gambling-houses, houses of prostitution, policy shops, pool-selling, concert saloons and various other places and means promotive of vice and crime throughout the city. The Committee on Enforcement of Law reports for the year, 239 persons arrested; 123 indicted; 8 gambling-houses and 12 houses of prostitution raided, and 120 suits commenced for penalties in violation of the Excise Law. Many of these have paid judgments and fines, amounting in all to $3,334.61, paid towards the Sinking Fund of the city. Besides which, several of the transgressors of the law have been imprisoned. The Society is rapidly becoming a power of great good. Rooms of the Society, 696 Broadway, New York.

Dr. William H. Smith, of Angelica, N. Y., the newly-appointed Health Officer of the Port of New York, in place of Dr. S. O. Vanderpoel, has been long and favorably known as a physician of good standing in Allegany County Medical Society. He has been a member of the Legislature, was surgeon for three years in the volunteer service during the war, in which he attained the rank of brigade-surgeon, and was subsequently surgeon-general on Governor Dix's staff.

A Detroit Board of Health?—By the Detroit *Evening News* it appears the City Councilor concurs with the Secretary of the Michigan State Board of Health in the propriety of having a city health officer with whom the State Board can communicate. The *News* expresses its admiration of the despicable system of sewers of that city, so well described by Civil Engineer Craig on other pages of this number, and the "Sanitary police who (don't) spy out filth in alleys and backyards and insist on its removal," and concludes: "It is doubtful if any board of health, howsoever elaborate and costly, could at present improve the public health of so healthy a city. While, therefore, we may be compelled to have a health officer, as the law seems to require, to report our vital statistics to Lansing, the Common Council should take care that he cost as little as possible, and meddle as little as possible with the people's private affairs." Yet the *News*, as a city newspaper, is supposably familiar with the city works. It is surely time the people in Detroit had learned, with other cities in this country, that the day has well nigh gone by when the right of killing one's neighbor by filth is considered a private affair, or any less criminal than by arsenic or other deadly poison, either publicly or privately; or that it does not imply an equally criminal toleration of filth to kill by diphtheria or typhoid fever, as by yellow fever, the difference chiefly being in climate.

Soap has recently become a prominent subject of discussion on account of the impure matters known to be extensively used in its manufacture and thought to be detrimental to health, and also, it is alleged, on account of the addition of adulterants to give it weight and bulk.

Soap is one of the necessities of life, and is essentially a compound of soluble alkali—soda, potash or ammonia—and *oil*, the alkali being in excess; and upon the careful adjustment of this excess and perfect solubility of the alkali, depends the detergent quality of the soap, no matter what the other properties claimed for it.

For oil in its ordinary form, except in countries which produce olive oil in abundance, as in the south of France, Italy and Spain, *tallow*, in various degrees of purity, and many other fatty substances, are substituted; but the real value of all fats used for the purpose depends upon the proportion of oil they contain. Perfumes, medicines and coloring matters, and, for use in the arts, other substances, are sometimes added to soaps in the process of manufacture; but none of these add anything to, while they may, and often do, detract from its excellence as a detergent. But the chief mischief arises from the want of skill in the adjustment of the excess of alkali, in order to avoid irritative and destructive qualities; the use of fats

and fatty substances in process of putrefaction; the incorporation of a fraudulent excess of water, and the addition of adulterants to increase bulk or weight: these properties will engage our attention hereafter. Premising for the present that of numerous samples of the common varieties of soap manufactured for household and laundry purposes before us, the "German Laundry Soap," manufactured by Mr. Chas. S. Higgins, presents more of the sensible properties of excellence than any other. It is more uniform in texture and color, contains less water, is completely free from greasiness, has no unpleasant odor, makes a better suds and leaves the hands softer after washing with it.

It is our purpose, however, in future numbers, by the aid of an analytical chemist, to treat this subject somewhat exhaustively, for in its economic, no less than in its sanitary aspects, it is of immense importance.

The Bicycle is evidently the coming horse of the future, fully comprehending all the advantages of horseback-riding as a healthful exercise, and excelling in all the pleasures of the country tourist. The velocipede of a few years ago is among the things that were, although it did good service for the time in straightening the backs and filling the chests of school-boys and collegians, at some risk, on account of defects in construction; but those defects have all been surmounted in the bicycle, and the risk of injury from riding it is really less than that of the horse, and less fatiguing. The public is already familiar with the extraordinary tour of Mr. Rollins last summer, from New York, by way of Saratoga and Rochester, to Chicago and back, which, we are assured by Mr. Rollins himself, was a tour of pleasure in all respects—neither alloyed with, nor followed by any unusual fatigue or discomfort, not even such as usually follows a day on horseback.

Considering the strait-jacket system and other constraints common to educational institutions and counting-rooms, the bicycle is the most important mechanical contribution to the promotion of health of modern times; and not for males only, but at least equally for females, it eminently merits commendation. Ladies' riding-habits adapted to the bicycle would at least be equally graceful with those for horseback riding, while the convenience and advantages to be derived from the use of the bicycle in the exercise of the muscles and lungs, render it superior to any form of physical exercise hitherto devised. And of the many bicycle-riding and tourists' clubs now in process of formation for the summer, we hope soon to hear of increased attractions by reason of the interest not only, but of the actual participation in them by the ladies—in all their pleasures and benefits.

Garden City.—Mr. C. L. Allen, the distinguished horticulturist of Long Island, in a recent lecture on "The Pleasures of Gardening," remarked:

"In this connection let me say a few words about the soil in and around Garden City, its capabilities for gardening purposes. Old Mr. and Mrs. Grumble and their dear friend, Mr. Drone, as well known here as in every other village throughout the land, will insist that our soil is unproductive, incapable of sustaining plant life, thereby rendering all efforts at gardening a useless task. Our experience here has been quite the reverse. Coming here last season, fully a month too late for successful operations, we succeeded in producing by far larger crops, and better than I have ever seen elsewhere, and that too, under the most discouraging circumstances. I have never seen, and I have been pretty well over the Northern, Eastern and Western States, as far as Kansas, a land upon which Nature has been so lavish with her gifts as she has in this place, or a land that has in it more of the essential elements that enter into the growth of plants. It is a singular fact in horticulture that Mr. Drone always has a poor soil; it is the cause of all his failures; it is equally strange why his near neighbors always have beauty and abundance in theirs. Mr. Grumble says, too, the winds are so terrific that nothing will succeed; that all our plants will be lifted out of the ground by its force and lost. What nonsense to think we have a monopoly or corner in the free circulation of air. It is true we have a more general, a more free circulation of the air than our neighboring towns, for which we are truly thankful; at the same time gusts here are less frequent, the currents here are more steady, and the damage to plants and field crops less than at any other place with which I am acquainted. There is no soil or situation anywhere in which all kind of plants will do well. A knowledge of selection is important to enable one to choose such as are adapted to any particular place. But any plant adapted to this climate will find as congenial a home, and can be grown with as little cost for labor and fertilizers, in and around Garden City, as in any other place in this country."

Literature.

Connecticut State Board of Health, second annual report, for 1879, with Registration Report for 1878, pp. 120 and 84, shows a decidedly growing interest in, and marked progress of State medicine in Connecticut. Drainage and Sewerage have received the special attention of the Board, and now appear to be the foremost sub-

jects of public works in the chief cities and towns throughout the State.

The depressing influence of epidemics or excessive prevalence of prominent forms of disease on the material circumstances of communities, and its relation to the purblind tolerance of filthy local conditions, is forcibly shown and illustrated by numerous cited examples, well calculated to interest and instruct the people. *The Functions of Modern Boards of Health* is the subject of a special paper by Prof. W. H. Brewer, which admirably shows the importance of skilled workmen in this department of public service, and the necessity of educating the people—of leading them—to a due appreciation of its benefits. Prof. C. A. Lindsley, M.D., furnishes a paper on *Sanitary and Unsanitary Conditions of the Soil*, which points out the relations of the soil to foulness of every kind; how through it wells and houses are polluted by the proximity of privy-vaults, cesspools, barn-yards, foul houses and leaky gas-mains. The Secretary, Dr. C. W. Chamberlain, besides summarizing the work of the Board for the year, furnishes a special paper on *School Hygiene*, by which it appears that in Connecticut, as elsewhere throughout the country, the school-rooms are fraught with irreparable dangers; that school trustees and teachers have never learned the necessity, or are reckless of the importance of pure air and well-regulated temperature to children.

The Secretary of the Board is also Superintendent of Registration of Vital Statistics.—During the year 1878 there were registered: Births, 13,499; marriages, 4,285; Deaths (including still-births), 9,352; Divorces, 401. Increase of births over deaths, 241 less than in 1877, and somewhat less than average for the last ten years. The number of divorces smaller than for many years. Of the causes of deaths, 2,162 were zymotic; 1,899 constitutional (diathetic and tubercular); 2,975 local; 1,268 developmental and 1,048 violent. 2,741 were of children under 5 years; 1,239, 5 to 20. Population (1870) 537,454.

The Nashville Board of Health Report for the two years ending December 31, 1878, is a singularly valuable city public document of nearly four hundred octavo pages, comprehending: Report on Sanitary Progress in Nashville, G. J. Berrien Lindsley, M.D., Health Officer; A Plea for Sanitary Reform, by Thomas L. Maddin, M.D.; Report of Committee of Citizens on the City Water Supply; Report of Committee on the Principal Water Works of the West; Report on the Progress Made in Improving the Water Supply of Nashville, by W. F. Foster, City Engineer; Statistical Tables and Mortuary Records of the City; The Sanitary Geology of Nashville, by Alexander Winchel, LL.D.; On Trees and Shrubbery, by August Gattinger, M.D.; On Mental and Physical Hygiene of Pub-

lic Schools, by J. Berrien Lindsley, M.D.; On Heating and Ventilating Public Schools, by N. T. Lupton, M.D., LL.D.; On Prevention of Yellow Fever in Nashville, 1878, by J. Berrien Lindsley, M. D.; and an Appendix of Recent Sanitary Organizations. Rarely have we come across so excellent a series of papers in any city health report—papers so well calculated to enlist public interest and to establish a basis of intelligent health administration. The nature and character of sanitary work are here presented in their most important and tangible aspects. The all-absorbing subject and danger for the time being, yellow fever, was met with an energy significant of mastery of the occasion, and while taking the most enlightened action for self protection, the health authorities were by no means unmindful of duty to their neighbors, either as flying from the plague, or under the restraints of quarantine. The sound of alarm in New Orleans and Memphis, found its echo in Nashville: war on filth! With one hand they swept away filth of every kind and kept down panic at home, while with the other they extended a cordial welcome to all who would accept refuge among them. Instead of shot-guns, the Common Council of Nashville, Aug. 20, 1878, adopted among other resolutions, the following: "*Resolved*, By the Mayor and Common Council of Nashville, that, so far from restricting the movements of travelers as well as refugees from infected cities, towns and precincts, we cordially invite all such, who may wish to do so, to make Nashville their home."

They proved their faith by their works.

California State Board of Health—Fifth biennial report, 1878 and 1879—makes an excellent showing, considering continued limitations of the legislature lest the people should learn more than the members thereof, of the means of promoting the public health. The appropriations for the two years, respectively, were $1,500 and $1,000, of which amounts, there remained at the end of the period an unexpended balance of $1,027.10. In short, the Board consists of voluntary workers who persist in their efforts to promote the health of the people despite the ignorance and meanness of a legislature which restricts the official report to prescribed limits, insomuch that the President, after stating that, "Investigations have been commenced into the sewerage and water supply of the cities and towns of California, and the results, as far as the work has progressed, are given in the present report, together with a few reflections, which seemed pertinent to these subjects," adds, "but the prescribed limits of this report forbid a more extended allusion to these important questions at this time."—The further presentation of these subjects to the consideration of the people is postponed until the next report, two years

hence. How many persons will sicken and die meanwhile, in consequence of this restraint, is a question apparently too profound for the consideration of the legislature. The report of the Board is ground down to a single page. The rest is left to the Secretary and a large corps of correspondents which he has been fortunate in securing throughout the State; and thirty pages appendix, of special reports: *On the Danger from Pestilence in California*, by Henry Gibbons, M.D., President of the Board; *Drainage and Sewerage*, by F. Walton Todd, M.D., Member of the Board; *On Abattoirs and Public Baths*, by A. B. Stout, M.D., Member of the Board; *Public Hygiene—the Importance of Flannel Underclothing*, by F. W. Hatch, M.D., Permanent Secretary of the Board; and *Report on San Louis Obispo County Hospital*, by W. W. Hayes, M.D.—The conclusions of the President on Epidemics are, that all experience goes to demonstrate that both yellow fever and cholera are intimately associated with local impurities and filthy modes of living, and that they may both be warded off by rigidly enforced sanitary measures.

Yellow fever, he thinks, can never invade California by reason of climate (cold) and distance from "its winter quarters on the Gulf of Mexico." Cholera may be introduced by land and water, but "will not spread without epidemic influence. Small-pox may be introduced at any time both by sea and land in spite of all precautions; against it compulsory vaccination is the only remedy.... Leprosy is a mere phantom. Quarantine, however needful, is an uncertain protection. As far as it diverts attention from causes of disease at home, it inspires a false security, and does harm. The true defense from pestilence in every form lies in the care of our own dwellings and their surroundings." Dr. Todd urges towns to establish drainage and sewerage systems *soon*, before the soil becomes saturated with excrementitious matters, and while the work can be most economically done through a virgin soil. Dr. Stout strongly urges the importance of isolated abattoirs and their adjuncts, and the necessity of so thoroughly policing them as to prevent nuisance. Public baths, he also urges the importance and almost inestimable value of, to public health, and holds up the praiseworthy example of Mr. James Lick's bequest of $150,000 for this purpose as a foundation which the civic authorities should elaborate for the good of the people. Gymnasia he regards as equivalents of prophylactics in medicine to protect the physical system from the invasions of disease, and should therefore be a part of the educational system. Dr. Hatch's paper on the importance of flannel underclothing is singularly apropos to the increasing prevalence of consumption in the State, and it would be a blessing to the people, if the legislature had sense enough to know that the dissemination of this paper, broadcast over the State, woul d

be a stroke of political economy, in saving the cost of sickness and funerals.

The general report of the Secretary summarizes a bulky correspondence on diphtheria, water supply and sewerage. Of diphtheria, while the opinions of correspondents are exceedingly diverse in regard to the cause, "the practical lesson is derived to avoid its possible sources: by cleanliness of the dwelling and its surroundings; by protection of the water from contamination; by the cleansing and disinfection of privies; by the ventilation of drains where these connect with sewers or cesspools; and by isolation of the sick." Information on the water supply is given by correspondents in reply to well-arranged schedules of questions. Of twenty-three cities and towns reported, the supplies are: wells, 5; wells and rivers, 4; wells and lakes, 1; wells and springs, 5; wells and mountain streams, 3; wells and rain-water, collected in cisterns, 1; shallow and artesian wells, 1; artesian wells and lakes, 1; mountain springs and streams, 1. In reply to the question: "Has any reliable analysis been made of it?" 22 responded "No."

On sewerage there were 23 reports, one only a complete system; seven had undertaken it. Of these the outfalls of six were into water courses, and partly so in one, the main portion being into a ditch near the town, where it is used for irrigation. "The facts collected, as a whole, show an urgent need of improvement." In small towns, the Secretary commends the use of earth-closets, and where privy-vaults are used: "They should be thoroughly ventilated, frequently disinfected, and emptied once or twice a year by the odorless excavating apparatus." The hygiene of dwellings is briefly discussed, and the danger of soil moisture especially emphasized. The dangers of cesspools, vaults and bad plumbing are all mentioned and illustrated. The mortality statistics for the two years, respectively, are made up from thirty-nine distinctive populations, including several country districts, giving, in 1877, ratios, per 1,000 of population, from 1 in Vallejo, population 5,000, to 53 in Cloverdale and vicinity, with a population of only 600; and in 1878 from 1.1 in Trucker, with a population of 1,800, to 37 in Willows and vicinity, with a population of 1,000. The excess in both cases (of the small populations) was from consumption. "The Statistics of this disease," the Secretary remarks, "are interesting in showing a decided increase in mortality for 1878 over that of 1877. The difference may be, in part, accounted for by the greater number and regularity of the reports .... but mainly by the greater mortality by this one disease in some of the larger cities of the State, notably San Francisco, Marysville and Los Angeles," where the cause assigned—want of previous regularity of re-

ports—hardly seems to apply. In San Francisco, with an estimated population of 300,000, of a total mortality of 5,507, the chief causes were, in 1877: diphtheria, 794; consumption, 635; pneumonia, 279; bronchitis, 58; other diseases of the respiratory organs, 121; typhoid fever, 196; small-pox, 140; diseases of the stomach and bowels (exclusive of diarrhœal diseases), 231; heart disease, 191; still-born, not estimated in the aggregate of deaths, 254. 1878: total, 4,742; diphtheria, 192; consumption, 692; pneumonia, 319; bronchitis, 76; other diseases of the respiratory organs, 109; typhoid fever, 133; diseases of the stomach and bowels (exclusive of diarrhœal), 211; heart disease, 220; still-births, 304.

Want of space forbids a further analysis of this excellent report, notwithstanding the legislative restraint alluded to. It hardly seems possible, in the face of such gratuitous scientific industry on the part of the Board and the physicians in co-operation with it, that California can much longer suffer the disgrace imposed upon it by a legislature so ignorant as not to appreciate the benefit of the health service to the people.

From the *Sacramento Union*, we learn the Board held its annual meeting for this year, Jan. 30. Present Drs. Henry Gibbons, Sr., and F. W. Hatch, of the old Board, and Drs. Cluness, Breyfogle, Widney and Mason, the newly-appointed members. John T. Carey and W. B. C. Brown administered the oath of office to the new members. The minutes of the last regular meeting were read and approved.

The Board then proceeded to the election of officers. Dr Gibbons was re-elected President, and Dr. F. W. Hatch permanent Secretary.

The Secretary reported the draft of an Act amendatory to the Act relating to the registration of marriages, births and deaths. The Act was read, amendments suggested and the bill approved. The Secretary was instructed to present the bill to the Legislature and request its adoption.

President Gibbons called attention to the presence of small-pox, which seems to be starting up in different parts of the State, and may possibly become rife in San Francisco. It was the opinion of the physicians that it is commonly periodical in its appearance, and that it is now about time for it to make itself actively manifest again. The necessity for vaccination was held to be important now, inasmuch as no general effort in that direction has been made for some time. The President added that there was at the present time a predisposition to exanthematous diseases generally. Dr. Widney stated that the Spanish ranch horses around Los Angeles formed a prolific source of this kind of disease.

The Secretary was directed, as a committee, to prepare a circular for distribution on the subject of diphtheria and small-pox, and the precautions advisable to be taken by the public. The President was subsequently added to the committee. After a general discussion upon the subject of vaccinnation and the relative value of the different kinds of virus, the Board adjourned, subject to call.

Hygiene and Medical Reports of the Navy,* 1879, "is the continuation of similar publications heretofore issued by the Bureau of Medicine and Surgery . . . to improve the sanitary condition of our ships of war, and diffuse knowledge of hygiene among the officers of the navy." The series of reports referred to by the late Surgeon-General Taylor, in this extract from the preface, appears to be those which began eight years ago, comprehended in three previous volumes, all together, being of considerable less magnitude than this volume for the four years inclusive, 1875 to '78. Reports of the same kind have been made to the Navy Department by medical officers for many years, the chief theme of which has always been the same as that which leads in this volume—the criminal negligence of the plainest principles of common sense by those in authority over the health of naval seamen, despite the reports of the medical officers. The volume comprehends 70 reports and papers, divided into two parts: Part I., 46 reports from vessels in service, and statistics of the diseases and deaths in the navy for 1875; and Part II., 23 miscellaneous reports and papers on the hygiene of naval stations and special subjects in the naval service. The air space for sleeping apartments of the crews of vessels reported on, ranges from 39 to 134 cubic feet, with almost no means of changing it. The temperature in the fire rooms of steamers under way commonly ranges from 150° to 198° F. Humidity to saturation; and habitually provided and kept up by almost daily deck washings, in all climates throughout the year. Surgeon Turner, in a report on "Moisture on Shipboard," after tabulating the daily routine of the vessels belonging to the Asiatic Squadron in 1876, gives the *Tennessee* as a special example: "The gun-deck was wet 301 times, the berth-deck 223 times—not including partial wettings . . . The excessive humidity of the air on the lower decks," Dr. Turner well remarks, "has its origin almost entirely in the daily water-soaking routine which exists in the service, and to which the decks are subjected.

"If this routine washing, holy-stoning, wiping, clamping, scrubbing, etc., is meant for cleanliness, an obvious inference therefrom would disrate the Augean Stables from their billets as the pre-eminent examples of filth, and our vessels would be promoted to that unenvied rating.

"If it is not meant for cleanliness, then in the light of modern scien-

* Hygiene and Medical Reports by Medical Officers of the U. S. Navy. Prepared for publication under the direction of the Surgeon-General of the Navy, by Joseph B. Parker, A.M., M.D., Surgeon U. S. Navy, Assistant to the Bureau of Medicine and Surgery. 8vo, pp., VIII., 1079. Washington: Government Printing Office, 1879.

tific research, it is the ruthless and barbarous weilding of a potent disease-producing weapon against the lives of the unoffending and powerless."

But, besides the special reports on naval hygiene, the volume contains much valuable information on the sanitary condition of foreign ports and hospitals, and special hygiene in certain foreign cities and States. Particularly worthy of mention in this respect are the reports of Surgeon Thos. C. Walton on the Sanitary Service of Copenhagen and Christiania, the regulations for prostitutes in Hamburg, and the measures taken to prevent the propagation of venereal disease in Denmark; Medical Inspector Gibbs on the Climatology and Topography of the Tropical Pacific coast in relation to yellow fever; Surgeon Jerome H. Kidder, on the Medical Topography of Beirut, Smyrna and other places visited, and, on the peculiarities of construction of, and impurities of the air on board the *Alliance;* Medical Inspector Albert C. Gorgas on the Diseases, Climatology and Medical Topography of Montivideo, Rio de Janeiro and Santos; Assistant Surgeon Samuel H. Dickson on the Medical Topography, Diseases and Sanitary Regulations of Fayal, Alexandria, Constantinople, Corsica and other places visited by the *Gettysburg;* Surgeon Thomas N. Penrose, on the Medical Topography, Diseases and Hospitals of Lisbon and Constantinople and Surgeon E. S. Bogert on Arresting Cholera on board the *Monongahela* at Shanghai.

Of the papers classed as "miscellaneous" among the most important are "Air and Moisture on Shipboard," by Medical Inspector Turner, already referred to; Surgeon Wolverton's account of the recurrence of the yellow fever on board the *Plymouth* after freezing; Report of Naval Medical Board on the yellow fever at Pensacola, 1874—of its origin by importation, but some pointed examples of means illustrating "the manner in which the germs of this disease are preserved from year to year." Surgeon Joseph G. Ayres' report on Yellow Fever at the Navy Yard, New York, in July, 1878, caused by the filthy ballast of several vessels, and most notably of one from Havana the month before; Yellow Fever at Key West, 1878, by Acting Assistant Surgeon R. J. Perry; Leprosy, by Surgeon Geo. W. Woods; Plague, by P. A. Surgeon John C. Wise; U. S. Naval Academy, by Medical Inspector Albert L. Gihon—this report is especially full and instructive on the hygienic relations of the Naval Academy in all its bearings, climate, topography, quarters, food, clothing, habits, sanitary and medical statistics. Transportation of the Sick and Wounded of Vessels of War, also by Medical Inspector Gihon, is a very complete paper, illustrated by the best devices for transporting the sick, equally applicable to quarantine service as naval. The Reports on the

Medical Topography and Sanitary Condition of the Naval Hospital at Chelsea, Mass., by Medical Director Joseph Wilson, and on the Naval Station at Kittery, Me., by Medical Inspector C. J. Cleborne, are both excellent examples of sanitary study, comprehending all the details of the respective situations. Medical Inspector Cleborne also has an excellent paper on Life-Saving at Sea, illustrated by cuts of the best known devices. Statistics Relating to the Health of the Navy, by Medical Inspector Thomas J. Turner, show an aggregate of force employed, disease and injury, and deaths for thirteen years (1864–1876): 201,509; 190,629; 2,250. Sick rate per 1000—945+; death-rate, 11+. The volume is a highly creditable one to the medical officers of the Navy, and discreditable to the officers of the Line.

The Quarantines of South Carolina are concisely summarized by the Chief Health Officer, Dr. Robert Lebby, in his report to the Governor for 1879, showing that, notwithstanding several of the stations are inconveniently situated and very inadequately equipped, yellow fever was completely excluded—not a case gained admittance to any port. Several important changes and better provision generally are urged as being essential to an effective quarantine, and the rules and regulations recommended by the National Board of Health endorsed, as a basis for future action.

Sanitary Drainage and its Relation to Preventable Diseases, by A. Converse, Columbus, O., is a pamphlet compilation of 61 pages from the best works on sanitary engineering, with such thorough command of the subject on the part of the author as to give a good context and lucid expression to conditions affecting health, of universal application. The more it is circulated the better for the people everywhere.

The Annual Report of Surgeon-General J. K. Barnes, U. S. Army, for 1879, shows an average mean strength of 21,716 white, and 1,947 colored troops. Of the white troops, the total number of cases of sickness was 37,810—1,741 per 1,000. Of this number, 32,682 or 1,505 per 1,000 were for disease, and 5,128 or 236 per 1,000 for wounds, accidents and injuries. The total number of deaths from all causes was 266, or 12 per 1,000. Of these 7 per 1,000 died of disease, and 5 per 1,000 of wounds, accidents and injuries. Total number of white soldiers discharged on Surgeon's certificate of disability was 677, or 31 per 1,000.

Among the colored troops, the total number of cases of sickness was 3,932, or 2,020 per 1,000. Of these 3,455 or 1,775 per 1,000 were cases of disease; and 477, or 245 per 1,000 wounds, accidents and in-

juries. The total number of deaths was 28, or 14 per 1,000. Of these 15, or 8 per 1,000 died of disease, and 13, or 6 per 1,000 of wounds, accidents and injuries. Total number of colored soldiers discharged on Surgeon's certificate of disability was 42, or 22 per 1,000.

"**The Sanitary Drainage of Houses and Towns.** Second Edition. Revised and Enlarged"* by the addition of thirty pages of new matter, rendered necessary by "material recent improvements," to which the author himself has greatly contributed—in overcoming the difficulties of village draining, the practical application of recent modifications and improvements in sanitary drainage, and in being among the foremost in the application of "separate system" sewerage and drainage works. As a practical hand-book for architects, sanitary engineers and plumbers, and reliance for householders and keepers, who would know the necessary conditions to healthful houses, it is a work of superior excellence.

Key to Ghostism† is the title of a book which all persons who are disposed to be credulous of the marvelous recitals of spiritualists or their dupes should read. The author draws largely from the avowals of "mediums" who have been engaged in practicing upon the credulity of people for gain; and by explaining the action of magnetism and the arts of the trickster, shows how science and invention are made subservient to deceit and knavery.

"**Hygiene and Education of Infants; or, How to take Care of Babies,**"‡ is an instructive mother's manual, giving the details of how a baby should be taken care of from birth: how to clothe it, how to feed it, how to wean it, etc., etc., that will greatly aid her in overcoming many anxieties which wait on every moment of a baby's life.

How to Educate the Feelings§ is an admirable book on the training of children, barring the attempt to make phrenology the basis of it. But little, however, is made of phrenology in the text, and

* By George E. Waring, Jr., Consulting Engineer, etc. 12mo. pp. viii., 366. Boston: Houghton, Osgood & Co.

† KEY TO GHOSTISM. Science and Art Unlock its Mysteries. By Rev. Thomas Mitchell, author of "Philosophy of God and the World," etc. 12mo. pp. 249. Cloth, price $1.50. New York: S. R. Wells & Co., Publishers, 737 Broadway.

‡ By the Société Française D'Hygiène, Paris. Translated by Geo. E. Walton, M.D., Professor of Principles and Practice of Medicine, Cincinnati College of Medicine, etc. 18mo, paper, price 25 cents. Robert Clarke & Co., Cincinnati, O.

§ How to Educate the Feelings or Affections. By Charles Bray. Edited, with Notes and Illustrations, from the Third London Edition, by Nelson Sizer, Author of "How to Teach," etc. 12mo, extra cloth. Illustrated. Price, $1.50. New York: S. R. Wells & Co., Publishers, 737 Broadway.

the phrenological chart may be disregarded or studied with better context in other works by the same publishers. No subject exceeds in importance the watchful care, the promotion or restraint, as the case may be, of the propensities and temperaments of children. This kind of education is, of all means, the one to be most relied upon for counteracting the results of heredity, for regaining as well as preserving both the social virtues and physical excellence. We heartily commend the work, and hope for it a large circulation. It is the best treatise we know of on the training of children by their parents.

Counsel to Parents on the Moral Education of their Children * is full of sound philosophy, based on a thorough comprehension of physiological laws and human excellence. We earnestly commend it as a book of sound knowledge on an exceedingly important subject, well and carefully expressed, and greatly conducive to health and happiness.

The Inebriates' Home, Fort Hamilton, L. I.—Rev. J. Willett, Superintendent—by the twelfth annual Report for 1879, continues to illustrate the results of good management. There were remaining in the institution at the beginning of the year 113 patients; admitted during the year 336, 94 of whom were re-admissions, making a total of 449 cases. Of these there were treated for acute alcoholic mania, 48; chronic mania, 32; delirium tremens, 20; convulsions, 13; chloroform inebriety, 3; for the use of opium, chloral and other narcotics, 40. Three deaths only occurred, and two of these were received in an incurable condition, and died a few days subsequent to admission. The average time of treatment, excepting a few who left within a month, was 20½ weeks. 120 remained at the end of the year. In tracing the results among the discharged for the year, as far as ascertainable, 139 were doing well, 56 drinking or doubtful, and 35 lost sight of, showing 60 per cent. of reclamations up to January 1st, 1880—a degree of success probably surpassing that of any other inebriate asylum in the United States.

Publications Received: Denison's Rocky Mountain Health Resorts—Houghton, Osgood & Co.; Drayton and McNeill's Brain and Mind—S. R. Wells & Co.; New Haven Board of Health Report; Cincinnati Health Department Report; Toxemic Diseases and their Treatment—W. R. Sevier, M.D., Jonesborough, Tenn.; Adams' Sewers and Drains for Populous Districts—Van Nostrand; Health Officer's Report, D. C.; Heartshorne's Our Homes—Health Primer—Presley Blakiston, Philadelphia.

* Counsel to Parents on the Moral Education of their Children. By Dr. Elizabeth Blackwell. Square 16mo., flexible cloth, pp. 160. Price, $1 00. New York: Brentano's Literary Emporium.

THE SANITARIAN.

A MONTHLY MAGAZINE.

Vol. VIII. JUNE, 1880. No. 87.

CHARLESTON WATER SUPPLY.

REPORT OF THE BOARD OF HEALTH ON THE WATER WORKS.

By Prof. MIDDLETON MICHEL, M.D., Chairman of the Committee on Epidemics and Public Hygiene.

It is proper to observe that responsible caution governs the expression of opinion relating to so important a subject as the purity of the water we are to drink, and that a thorough investigation of every part of the inquiry, irrespective of the time or labor it involved, has been a duty with us as custodians of the public health, the discharge of which is the more imperative since a general impression—the most fallacious of all evidence—that this water must of necessity become polluted, has greatly exercised the thinking public.

An array of prerogative facts are the only kind, it must be remembered, which satisfy the demands of science in an investigation of this sort, and on such alone, therefore, shall we rely.

In this, as on many other occasions, we see a signal illustration of the truth that popular anxieties are often found drifting into the misdirected channels of true danger. There are those who are ready to declare that they would not exchange our accustomed cistern water for artesian water delivered to them through iron pipes by pressure, in a constant flow and with fixed velocity, though a sanitarian knows that brick cemented yet porous walled cisterns cannot be depended upon as being water-tight. It is therefore strange that we should hear complaints about the permanent purity of water rushing onwards through tested iron pipes, under a pressure of fifty pounds to the square inch, from those who have never raised an objection to the purity of our cistern water, imperfectly protected from soil infiltration and stagnant repose, within a porous vault already surcharged with organic detritus washed down into it from our roofs. In a recent sanitary survey of Memphis, on the eve of being presented to the National Board of Health, Dr. R. W. Mitchell, a member of that Board, finds the water of five hundred and thirty cisterns thus far analyzed so polluted that an immediate interdict on the use of one-third of them appears called for. This befouling of cisterns, readily

ascertained by the chlorine determinations in the analysis, has rarely if ever been evoked to account for the origin of yellow fever, typhoid, or any other disease, and is only here referred to in order to show that such pollution exists. We intentionally exclude from our report any discussion of the "drinking-water theory," the debatable problem of the filth-origin of disease (pythogenetic), and will not enter upon that line of argument which discusses disease as originating *within* the patient so that he infects himself (autogenetic), or from one patient to another (heterogenetic). We shall not describe the particular effects of tainted food, whether solid or fluid, upon the body, how impure water may be drunk, or what becomes of the epicure who never eats his game until it is crawling off the table. But in pretermitting this discussion, properly the province of the medical scientist, we shall confine ourselves, in the direction which the solution of our problem must take, to the other department of sanitary science that engages the services of the sanitary engineer. In conveying potable water in conduits and its distribution by mains and service-pipes there are questions of hygiene involved, as when lead-pipes are used, with which an aptly appointed scientist is presumed to be acquainted. Thus the best material to be employed is first recognized and suggested by the medical sanitarian; the proper consummation of the work, however, belongs to the engineer. Now the material employed for the main distribution pipes has been determined, and should be of *cast*, not wrought iron, subjected to a particular process in the method of moulding, pouring, coating and hydraulic proof. Have these conditions been complied with in the case before us? Your committee ascertains that they have. The pipe *moulds* are from the foundry of R. D. Wood & Co. and appear to have secured all accuracy of form and thickness, through a careful tempering of the sand and drying of the mould so to withstand the trying action of the molten metal. In *pouring* the castings are protected from sudden chills while cooling. To protect the pipes from corrosion the process of *coating* is then had recourse to, which we find is the one devised by Dr. Angus Smith and universally approved of. This process is as follows: The pipes, free from rust, are heated to a temperature of 500 degrees Fahrenheit, until the pores of the iron are well opened, they are then dipped perpendicularly into a hot bath of coal-tar varnish, previously deodorized, the naphtha removed, and here remain until a varnish coating has perfectly formed on both faces of the casting. The *hydraulic* testing machine, which we shall not describe, though the drawing is before us, next subjects each pipe to a pressure test of three hundred pounds per square inch, and if evidences of porousness or weakness are found the pipe is condemned. In this connection the *durability* or life of the pipe, as it is called, is important. We have ascertained that its minimum duration is thirteen or seventeen years. Its maximum perhaps over one hundred years. The Hon. A. W. Craven, formerly chief engineer of the Croton Aqueduct Department, New York, says: "In cast iron you are dealing with a certainty. Pipe which has been in constant use for one hundred years, and unprotected by any coating, either on its interior of exterior surfaces, has been examined, and to no appreciable extent was there any diminution in its weight or strength. It is the opinion of those engineers who have had most experience in

and given most study to this subject, that we have not had an opportunity to define the limit to the duration of cast-iron pipe used for aqueduct purposes." From a sanitary standpoint, then, such a material and such a surface is practically as good a one as could be desired or obtained, and of such a nature your committee find the pipes to be that are being laid in this city.

The mode of junction of these pipes is not without its bearing upon the water they transmit, and must here be considered. The method usually adopted and described in our works on hygiene is the one here carried out. The hub and spigot joint is packed with tow, and then melted lead is run in and driven up with a set. Now, we must state that the tow may impart for a while an unpleasant taste to the water; for in Europe this was found to be the case, and it has, therefore, been recommended that the joints should be carefully painted with Portland cement. This has not been done; but, from the nature of the operations which we have inspected, we do not think this will affect the water deleteriously, and, from the relative expansive power of lead and iron, the former being two and a half times greater than the later, the joint only becomes the tighter.

In the engineering of these practically impermeable iron-pipes there seems necessary that two chief indications should be fulfilled. These are: Their location at a certain depth, controlled in each latitude by terrine conditions, and the observance of a strict level course; that by the first condition they shall be protected from all injury of traffic or frost, and by the second that they may deliver their contents without impediment. In the maintenance of these rules we must at once perceive what diversified relations water-pipes must bear to drains, sewers, culverts and like structures in different parts of the world. Thus in one city whose drainage is perfect there may be no communication with drain or sewer; in another less favored locality the pipes in a few places may pass directly *through sewers*, as in Louisville, Ky., while in Paris a double set of sewers exist, and in one set, carrying the ordinary drainage, water-pipes pass *through* their whole length.

It is just here that we should inquire, what would be the nature of this engineering work done in a city like our own; in what way would it have to be performed, and what would be the sanitary significance of the work when accomplished? That the engineer must observe his fixed rules here as elsewhere is obvious, but what relation will his work bear to the drainage arrangement of Charleston? We speak advisedly of simply a drainage arrangement, since actually no system in the matter obtains. Unfortunate as this may be, how much greater would have been this evil if it actually related to sewage matter, properly speaking to excremental defilement, which happily is not the case. Upon this point we cannot too stringently insist, as this has everything to do with the veritable question of the propagation of disease through the dejecta and emanations from the patient himself. To entirely appreciate our meaning then, we must recall the flat site of our seaside town situated between two rivers and largely saturated, always percolated, by salt water; there must be a free circulation of salt water through the pores of our soil, when we consider the diurnal rise and fall of the tide; whatever we may say of the moisture of the soil which ensues, we can affirm at least that stagnation of wa-

ter and changes in the soil are thereby largely prevented. To remedy this hygrometric condition when carried to excess, attempts at drainage independently undertaken have resulted in the course of time, as might have been expected, in as incongruous and inefficient a piece of work as could be exhibited in any part of the wide world; but, however imperfect, as we have already said, it does not involve the question of sewage proper, excrementitious matter *per se*, as is meant in all other cities in which we speak of sewers and sewerage. These are drains in our city not sewers, for soil moisture, not animal or human excreta, receptacles of surfacial deposits, and from deeper layers of salt water itself an antiseptic. To return to the subject then, these imperfect laterals, of irregular construction, built of different materials, running into the mains at different heights, constitute an obstacle to the passage of a water pipe at any depth; the natural consequence of which has been that maintaining the required level the pipe passes sometimes above, sometimes below, and in some *few* instances—ascertained, numbered, and now before your committee—transfixes or *intersects* the drain itself; but even where this has occurred it must not be forgotten that no pipe rests in sewage matter in Charleston, since these drains contain the foul soil moisture and domestic wastes of kitchen and yard, upon much of which, did time and space permit, we could show the wonderful septic effect of the earth through which percolation has taken place. We dwell pertinently on the fact that no drain is filled with human excreta, since this circumstance is connected with the early history of the old primitive Charleston without a water supply, when it was not willing to incur the expense necessary to secure what many would term, perhaps, the benefits of the sewerage system as it exists elsewhere; resort was had therefore to vaults more or less remote from the dwelling house, a primitive state of things which obtains throughout this day, and which, under the modifications of structure and with annual removals of their contents by the pneummatic ordorless excavator, as proposed and about to be realized by this Board, inaugurates a safer system of disposing of and utilizing sewage than where water-supply and sewage are combined. At one stage of our inquiries on this point we were led to suspect that three particular drains connected with the Roper Hospital in Mazyck Street might possibly form an exception to this general rule, and as there was doubt expressed your committee requested the city engineer to re-open these for our careful inspection. This was done, and it was ascertained that the water pipe passed four feet above the lateral, which itself enters the main at seven feet beneath the surface; and again it was further ascertained that this drain, the principal hospital drain, no longer communicated, as it once formerly did, with the vaults, now dry depots of this institution; while the other two drains only served to collect the surface moisture from the enclosure and garden in front of this building. Again, in two other instances under our observation, in which the yard drains were obscurely connected with the street laterals, these drains were re-established and made to connect with the mains through six inch iron pipes, securing for these two residences in King and in George Streets the most perfect and approved method of house and lot drainage known. Along Rutledge to Calhoun Streets, where an excess of salt water might be supposed to exercise some influence over the du-

rability of the iron, it should be stated that no probable bad results need be apprehended, since on this very subject, the effects of salt water upon iron piping, experiments have been made at Cherbourg, on the coast of France, which proved perfectly satisfactory to the engineering corps.

In presence of such facts as have been elicited by this research, we believe ourselves authorized in offering a perfectly unbiased opinion on the proper subject of this report, one which indeed much concerns each and every one of us in the future. Considering the impermeability of these cast-iron pipes, their inside strength and known durability, the constant delivery system, which is the contract, the true nature of the contents of our drains, and the head pressure of fifty pounds to the square inch, there seems to us no theoretical probability even of osmosis taking place, no gaseous penetration appears possible with the rush of water outwards in the event of actual clearage or perforation, and even should an oblique intercommunication between drain and pipe obtain, instituting what is called negative pressure, the suction exerted on the hydraulic theory of Venturi, known to all physicists, could reach no practically appreciable extent under the conditions of the problem before us. On the contrary, gaseous emanations would sooner percolate imperfectly constructed drains of wood and clay, brick and mortar, and reaching the porous earth would be decomposed and rendered inert. Should sewage leak along the sides of the water-pipe to the nearest joint in reach, constructed as are these joints, insoluble lead compounds at most would be formed.

But, admitting the pipes laid actually in sewage, or in close proximity with nitrogenous substances, undergoing retrogressive metamorphoses, resolving themselves into elementary compounds, we have now to mention an all important fact of chemical import which appears to have escaped all public notice, and which, nevertheless, clinches the argument and settles the question: Iron water-pipes have a distinct chemical value. Professor Medlock proved by analysis, several years ago, that iron, by its action on nitrogenous organic matter, produces nitrous acid, which. Muspratt called "Nature's Scavenger." The distinguished chemist last mentioned declares that when water has remained in long contact with a large surface of iron, every trace of organic matter was in two days rendered insoluble or wholly destroyed. Medlock confirmed the same results in his examinations of the Amsterdam water which presented a bad taste and smell. He analyzed water brought in contact with iron, and water which had not touched iron, with the result that this latter contained 2.10 grains of organic matter, and 0.96 grain iron; the other gave but a trace of both, the organic matter was plainly shown to be either decomposed or thrown down by contact with iron, and this water was found, when filtered, to be clear, inodorous, of good taste, and free from organic matter.

We conclude our remarks by stating that no apprehension need be entertained, in our judgement, of the purity of our promised water supply in the future, which will doubtless reach us less defiled than that which our cisterns have so long furnished, while we would recommend that, in this city, as in all other cities provided with water works of the kind, a semi-annual examination analysis of the water be made the subject of an official report, by some one properly qualified

and appointed to perform this duty; and we would also remark that should there be any obstruction to the drains in any special locality, likely to interfere with soil drainage of any lot in this city, in the judgment of this Board, they hold themselves prepared, upon being notified of the same, to see that the difficulty be rectified.

———o———

The Germ Disease Theory.—A contribution to this subject has been made by Koch, who finds that certain species of Bacteria, the lowest forms of plant life, occur in certain forms of disease in certain species of animals, and that such animals inoculated with such Bacteria suffer from these diseases. Koch's method has been to inoculate mice or rabbits with decomposing animal matter; to notice what symptoms, if any, were the result of the operation; and to examine the tissues of the infected animal for the particular form of microphyte contained in the injected fluid. By injecting putrid blood or infusion of meat, and thus artificially producing septicæmia in mice, the animals died in a few hours; but it was found that the Bacteria originally injected were still confined to the cellular tissues under the skin, and that they had not propagated themselves. It was also found that healthy animals inoculated with the blood of the dead animals were not injured by it. Here, then, the disease was evidently due not to the living plants, but to a soluble poison—septin or sepsin—existing with the Bacteria in the putrid fluid. But other symptoms set in in about one-third of the cases, and it was found that one-tenth of a drop of blood from any part of an infected animal was able to communicate the disease to another. Thus Koch carried the disease through seventeen successive animals, the second being infected from the first, and so on through the entire series. An examination of the blood of any of these mice revealed multitudes of minute Bacillus-like Bacteria, of definite size and form, and evidently the contagium of this particular form of traumatic septicæmia, a disease peculiar to house mice. Besides the characteristic Bacteria, occasionally a micrococcus-form was observed, which multiplied with great rapidity, forming characteristic chains in the subcutaneous tissue, the septicæmia Bacillus at the same time living and increasing in the blood. When injected into a mouse's ear these micrococci produced a perfectly distinctive disease, *i.e.*, necrosis of the tissues of the ear, which were penetrated through and through, and which were destroyed by the rapid multiplication of the micrococcus plants. This, and experiments on rabbits and other mice, showed that infection was produced by infinitesimal as well as by large doses; the Bacterium forms for each disease seemed thoroughly characteristic, the plants differing in size, mode of occurrence, etc., the presence of these microphytes being an indispensable requisite in the development of these symptoms. On the other hand, Dr. T. R. Lewis claims that one of the chief arguments against the germ disease theory is the fact that a septiferous fluid retains its virulence after being boiled, filtered, evaporated, or combined with acids in the form of salts, but it is argued that this is not opposed to the action of a specific poison produced by the microphytes by a process of fermentation in the decomposing fluid.—*American Naturalist.*

INDIVIDUAL WORK AS RELATED TO HEALTH BOARDS IN THE FUTURE OF SANITARY SCIENCE.

By W. R. Bartlett, M.D., New Haven, Conn.

Sanitary Science has been on trial in this country now for the past five or ten years in a very earnest way, and the question naturally arises, What progress has it made and how nearly has it attained the object of its existence? I say the question now arises, because in many places it has passed the formative stage of existence, its appurtenances have been provided, and have been put in operation, and now it becomes those who are interested in its welfare to ask as to its present position and its future course.

One thing certainly has been demonstrated, viz.: it is a success. Causes of disease external to the body have been investigated, the influences of air, food, drink and social relations in causing disease have been traced out in the light of cause and effect. We have thus far learned that in our northern cities, by the public administration of officers of health, typhoid fever, small-pox, malaria, diphtheria, scarlatina, and the milder eruptive diseases, can be stamped out and kept from our borders by sanitary supervision and sewerage, and we know also that in Memphis and New Orleans yellow fever may likewise be kept in abeyance, if not wholly obliterated, by the same sanitary precautions, combined with an efficient quarantine; and we confidently look forward to the consummation of this result by the means which the National Board of Health have set in action. But while we know these things we must not ignore the fact that the great and highest consummation of sanitary reform lies beyond and deeper than this, in the very midst of the people themselves, and in their action and knowledge; they must be brought to see that on themselves, individually and collectively, rests the obligation of sanitary reform, and that only as they fulfill these obligations can the work of health boards be effectually supplemented and made permanent. The people themselves must resolve themselves into self-constituted officers of health and administrators of health, not only for themselves, but for others, to a proper extent; then, and then only, can that large class of diseases be reached which so largely depend upon individual action and habit—diseases not necessarily or immediately fatal, but which entail so much misery upon humanity. If the individual puts himself in the way of health and throws about himself those safeguards which minister to healthy action, then sanitary reform and its cause realize a mighty stimulus, gradually, if not immediately, vices and taints of heredity will fade away and disappear, children will be exempted from the imminent peril of life which now besets them, their tendencies toward disease will be mitigated, their weakness strengthened, their healthy tendencies fostered; and in the case of adults the method of life will be so regulated that there will be a nicer adjustment between work and capacity for work. Not so often will we hear of strong men dying in their very prime because of overtaxed and broken powers of mind and body; not so often will phthisis carry away so many of the young men and women of our country; not so many of the same

class, and those of a still later period of life, will fill our insane asylums. Neither will so many cripples abound, nor deformed persons suffer from such afflictions. The sudden deaths from apoplexy and heart disease will not often startle the community, the miseries of scrofula and cancer, of rheumatism and neuralgia, will not disquiet so many, the lingerings of Bright's disease, the quick culminations of pneumonia, the living deaths from dyspepsia, the feebleness of weak womanhood, the perils of occupation and dangers from culpable carelessness will be lessened, a better physical development will be attained to—in short, the whole mass of man and womanhood will be permeated with those influences which lift them up to that higher ideal which it is not visionary to expect—that they may attain to. And so, while we sustain by our pecuniary and moral support every effort set forth to make effective the judicial work of boards of health, let us also give them and ourselves the benefit of that mutual support which comes from a personal recognition and practice of personal hygiene and the individual practice of its precepts.

It cannot be expected that these results can be brought about suddenly; the work is too complicated and the problem too far-reaching to be accomplished and solved in a day or year, but it is because such is the fact, and because the scope of its possibilities are so vast that steady, constant, unremitted effort should be made in this direction; the course is right and the journey should be followed up each day by each person from year to year, from generation to generation, for thus will the work and the harvest grow together. We must not sit down and say to ourselves, because we cannot do these things now in their perfection, because the consummation may not be reached in its entirety in our day, that we must do nothing; it is the old story of him who plants the oak, who never expects to sit beneath its spreading branches or view its massive trunk; he will be content even if he is permitted to see a young and vigorous tree progressing in its upward way. Such perfections have been reached in the past, such perfections are maintained now by enforced discipline - as witness the low death-rate in foundling asylums and in prisons that are well regulated; and there is no reason why such perfections may not be maintained in general, and be made perpetual.

It is not technical science alone that is to do these things; it must not be a long and wearisome discipline on the part of the individual; but if the individual lives in an atmosphere of health, he will breathe that atmosphere, his very life will be permeated with it, and its expansive power will not only fill him, but all about him. Not merely in the digging of sewers, in the abating of nuisances, in the building of proper houses, in the stamping out of infections, are we to attain these results, but in that constant, steady attack upon these deep-seated diseases and perversities of our lives which hinder our growth. And this is not to be done by the stronger sex alone, but by women as well, and chiefly at home, and as Mr. Richardson says, in his address on the future of sanitary science, in speaking of this peculiar influence of woman: "To women more than men this work is new. To women more than to men this work is hard to realize. Naturally more conservative than men, they are moved with less haste to tasks of reformation and reconstruction. More sensitive to criticism than men,

they are given at first to resent, as if it were an insult to past customs and usages to which they are attached, the suggestion of innovation. But these passing difficulties removed, there is in the hearts of women such matchless generosity, such overpowering love for every device tending to promote the happiness of anything of life, that we sanitarians may be indeed content for the future of sanitary science in its social aspects, if we do no more than win them to our cause and entrust its details to their ministering spell, and as Billings states in Buck's Hygiene, that in this country 100,000 lives may be annually saved by the ordinary sanitary means, and that it is theoretically possible to treble this number, if woman can bear such a part in this achievement, she thus beautifully adorns the oft-depicted beauties of a complete womanhood. But some one may say, Why shall we do these things? Shall we deprive ourselves of luxury or pleasures or inclination for others, or for those who come after us? Shall we not rather "eat and drink and be merry, for to-morrow we die"? To this we answer, you may, but remember "that for all these things there is a judgment," a judgment in this life which takes hold on happiness; so that the blessed eventide of life which is man's natural heritage may never come, or, if it comes at all, in especial weakness and pain, and in a miserable old age; thus, while you take your pleasure you take the pain also, and deprive others of that benefit which you can so easily give. A tree planted by the waters drinks of them from its very rootlets; it spreads in greenness, but the waters fail not nor suffer; the tree spreads its leafy arms over them, and the scene is one of gladness. Man may so forget himself as to live a life of sacrifice from pure benevolence, though such an instance is rare; but when he benefits himself, prolongs his life, and helps those who are around him, he makes a sacrifice in which the circle of benefits is complete. And who does it better than he who lives according to those principles which build and fortify and prolong the healthy standard of life? Thus will the lines of care on human faces be softened, the sharpness of mental and physical suffering be dulled, and the calm dignity of all that is higher and better shine forth from faces more like that image which is divine, for the physical, the moral and the spiritual in man all blend together in the building up of the perfect man, and when a lofty idea permeates the man, then the whole being expands and is glorified.

So may man, in his own body, work a great transformation; thus, a weak man, a man with a hereditary taint, a man with scrofula lurking in his system or phthisis ready to prey upon him, may, by a careful, persevering course of life, grow from weakness to strength, may, year by year, see his foes failing, may feel his strength growing, his very life expanding, and when he reaches middle life, he becomes a very marvel to himself; he is indeed a new man, a statue come out of clay, and his later life is one of triumph over the flesh, and of weakness made strong. Living such a life, he solves much of the mystery of life; his early struggles and disappointments become his triumphs, the dark ways are made plain; he looks back upon the past and learns lessons, gets hope and inspiration for the future, with a brain developed in symmetry and a well-developed organism; he can weigh the past, he can forecast the future, and reap the double

harvest of a well-adjusted life. Out of the rich storehouse of experience he can counsel others, he can help the young, the weak and inexperienced, and many a problem in domestic and social life will come to be elucidated by his aid.

Says Richardson: "The laws by which the health of a man, and thereby a nation, can be preserved to the utmost, are so simple in nature that nothing but the utmost simplicity can truly express them; and the whole labor of the future, if it is to be of any service whatever, must be directed to the discovery and establishment of such simplicity of exposition and direction." There is no glow of romance about this, nothing of weak sentimentalism; it is not a visionary dream. If the consolations of religion lift the individual up, if morality brings its own reward, so do lives governed by the principles of health blend and mingle with all that is sweet and noble and far-reaching and true in life, and even take hold on those things which make for that which is to come. Man is a free-will being, and, while we cannot compass providential dispensation, we yet know that the span of life is certainly three-score and ten years, and the psalmist's lament is that they are then but "labor and sorrow;" if such is the period of life, we also know that there was a time when it reached far out beyond this, and the patriarch of a hundred years was young; surely then, in our time, is it not in accord with the divine design that the labor and sorrow of three score years and ten should rather be the golden decline of a ripe old age, and that untimely deaths in middle life, in youth, childhood and infancy, now so often called providential, should not so often occur, and that it is rather His pleasure that the souls which enter into the life to come shall be those whose race is fully run, whose work is all done. Perfection of body, perfection of life, the religious and physical thus blended together, make men more fitted for the indwelling of the divine. Thus, while you prolong life you lessen suffering, take out of the world some of its misery, hearts are less often broken by untimely deaths, poverty and squalor are less often known, and something of that era which poets dream of will be the real and actual experience of man.

We in our day and they in that better one which is to come can have that balance which the old Greeks in their day of physical greatness never had—a religion co-ordinating and working in harmony with all these great results, a religion, not of stoicism, or of pleasure, or of asceticism, but one which will open into a future and a result which redeems both the body and the soul.

It is not necessary for me to enter into great detail, to enlarge upon the pecuniary saving that would result from carrying out the ideas above elucidated, but the productive capacity of the race would be vastly enhanced. Suppose, for instance, after eliminating the zymotic diseases, and the consequent reduction of the death-rate, we are yet able in this peculiar field to reduce the ratio of sickness even one per cent. more, how many of the real wearing, prostrating ills of life would be mitigated? For these diseases are, for the most part, of a chronic nature, or often recurring. An epidemic of diphtheria or typhoid fever comes with a sudden violence; its fearful force is felt at once, its harvest of death is reaped, and, terrible as it is, it is

gone at last; but these diseases are always with us, dragging us down if we attempt to step up to a higher plane for a moment; the weights are too heavy for us, and, like drowning men, we sink back again; no sudden impulse can keep us up; we need a strong and constant force beneath us to bear us up. When sudden sickness comes upon us, all the heroic elements of our nature fight against it and nerve us on; but when lingering disease enervates us, like weaklings we fail. So then, in elevating the standard of life, we not only lower the death-rate, but we also enhance the value of living. And so, while health boards are to be the framework of the machinery which is to set in motion the wheels of public hygiene, the strong pillars of its support, the court of arbitration and appeals to which the people may and must look for judgment on these matters in all the questions of public expediency and public necessity in respect to public hygiene, there are yet places and causes of disease which they cannot directly touch, and which, if not touched, the work of hygiene is not complete. And here it is that the work of the individual must begin to make the building complete, to keep the wheels in motion and the spirit of life in the mass of the community. President Cabell, in his opening address before the last meeting of the American Public Health Association, says as follows: "We are entirely convinced that the future of public hygiene in this country depends mainly upon the proper organization of State and local boards of health, and upon such recognition of their importance and utility by the people and their legislators, that the necessary means and powers shall be granted to them to enable them properly to perform their duties."* This is all golden truth, but while accepting it we must not forget the supplementary co-operative work in the peculiar domain of individual responsibility and personal work which we have dwelt upon. Thus the two will grow together in harmony, and while executive work leads to reform, individual action will uphold, stay and strengthen the very life of the great cause. But what will it amount to? Simply this: our great republic, great in wealth and resources, now will also be great in the vigor of body and mind of its people, a race not only of intellects, but of healthy men; the period of life will stretch out a span further, and dying will take on less of violence, less of tragedy and more of transition; more of the character of work completed, of a course fully run. Why may not the Americans be the ideal race of the future, with the blood of generations of a scrofulous, nervous ancestry, purified and regenerated, flowing through a new race partaking of all the nobility of the old, freed from its degeneracy, breathing a new atmosphere of vitalized energy. And our great spaces of the West will teem with a great race, while science and skill will make the waste worn-out places of the East new lands and better soils, fit counterpart of the work that has gone on in the race, both alike thus redeemed from neglect, from degeneracy, from over-culture and ill-adapted husbandry.

---

* See SANITARIAN, Jan., 1880.

PROTECTION FROM VENEREAL DISEASES IN AMERICA.

Our attention has been called to an article, with the above title, published in the SANITARIAN, of January, 1880, by Dr. A. L. Gihon, Medical Director of the United States Navy, and read before the American Public Health Association. The importance of the subject, and the official and responsible position occupied by the author of the paper, call for a reply, and the present time is, in some respects, peculiarly advantageous for the discussion, as the whole question of the Contagious Diseases Acts (women) is at present under examination by a Select Committee of the House of Commons, and the evidence we shall adduce in this reply will be drawn, as far as possible, from that given before the Committee. It has there been subjected to the most rigorous cross-examination, and therefore possesses a stamp of accuracy which materially adds to its weight.

At the outset, we may remark that we have not sufficient acquaintance with the interior of American society and American medical practice to form a competent judgment of the strict accuracy and freedom from exaggeration of the picture relating to venereal diseases in America, which is put before us by Dr. Gihon; but it gives us the impression of being exaggerated and highly sensational in its character.

The evils resulting from these diseases no one would deny who has had even a limited experience in his profession; but if an address was delivered, in a similar strain, upon the dangers to innocent women, not from the libertines of society but from the police employed in carrying out the legislation, relative to these diseases, in England and on the Continent of Europe, such an address would at once be denounced as the wild imagination of a fanatical opponent. In our reply we shall endeavor to confine ourselves to the simple statement of facts, and give our authority in each case, comparing the picture put forward in Dr. Gihon's sensational address with the severely criticised evidence laid before the Select Committee above mentioned, and the other official authorities adduced.

DR. GIHON, page 25.—"What has the wisdom of this century done to counteract the ignorance of the abandoned woman and this heedless boy, and prevent them sowing the seeds of a *pestilence whose victims outnumber those of any known malady?* A few hundred human beings have died of yellow fever this summer. How many *thousands*, blighted by venereal diseases, have, *during that same time*, crawled from the wayside into obscurity, to linger silently for years, but just as certainly to die before their time, ... but not till they have transmitted their fatal inheritance to long lines of sufferers."

ANSWER.—We have not the statistics of deaths in America to assist us, but the following is the answer furnished by the Registrar-General's return of births and deaths in England and Wales for the period of a quarter of a century, 1848 to 1872. (Supplement to the 35th annual report, p. cxxxviii. and p. cxliv., and tables 33–34):

Only one infant dies yearly under one year old from hereditary syphilis in a population of 24,500 persons.

Only one child dies yearly between one and five years old from hereditary syphilis in 273,334 persons.

Only one person dies yearly from syphilis between 15 and 55 years of age in a population of 78,000 persons.

The total deaths from every cause are 448,829 yearly.

The total deaths from syphilis at every age are 1,201 yearly.

The deaths from syphilis, both hereditary and self-contracted, are, therefore, only one in 374 deaths.

So far for the *actual mortality* from this disease.

When *compared with* that from *other diseases* the following is the result:

There are 25 causes of death, which are so *frequent* and *important*, that they occupy 419 pages in the supplement to the 35th Annual Report of the Registrar-General, but *syphilis is not once alluded to.*

There are 20 diseases which are supposed to be so *preventible* that they are specified in the form supplied by the government to every "Medical Officer of Health" in England, that he may inform the government of their prevalence, *but syphilis is not included among them.*

The published reports from 188 of these "Medical Officers of Health" have been obtained, and only *two* of them mention syphilis at all in their reports.—(Evidence Select Committee, 2–350).

When compared with some other diseases syphilis shows the following mortality on the average of 25 years (omitting decimals):

Syphilis.	*Other Diseases.*
Syphilis.....6	"Thrush"..... 7
Syphilis.....1	Rheumatism.....3
Syphilis.....1	Measles.....10
Syphilis.....1	Whooping-Cough.....11
Syphilis.....1	Scarlet Fever.....20

There are 60 diseases tabulated in the order of their fatality by the Registrar-General:

In 1868 syphilis stood 42d in the list.—31st Annual Report, p. 227.

In 1872 syphilis stood 45th in the list.—35th Annual Report, p. 244.

On the average of 25 years it stood 53d in the list computed from tables, p. cxxxviii. and cxlix. Yet Dr. Gihon asserts, without offering any proof, that the "victims of this pestilence (syphilis) outnumber those of any known malady."

In the British Army, on the average of the last six years, the deaths from syphilis were only one death in above 16,000 men.—(Evidence Select Committee and Jurist, 72).

When the above official returns are taken into consideration the appalling estimate put forward by Dr. Gihon can only be regarded as imaginary, and exaggerated by his fears, or by an individual experience, instead of being based upon extended facts.

But Dr. Gihon says, "the sick returns of the army and navy are inexact, general terms—such as rheumatism—concealing a great proportion of chronic syphilitic and gonorrhœal complaints." With reference to this often repeated statement Sir Wm. Muir, the Medical Director-General of the British Army, informed the Select Committee that it is now common to ascribe almost everything to syphilis (2,

136–137), which probably leads to as much exaggeration as counterbalances the inexactness complained of by Dr. Gihon. But grant, for the sake of argument, that the deaths were twice as numerous as they are. The proportion would even then fall very far short of the terms in which they are spoken of by Dr. Gihon in the address we are reviewing.

The portion of Dr. Gihon's address, commencing at page 25 with, "your guileless daughters" and ending with, "nasty linen" on the following page, is an example of such wild exaggeration in its general import as we have seldom met with, and is sufficiently answered by the paragraph from his own address, which follows immediately after "double meaning," "the Jurist must allow, that *however rare or improbable in practice*, any of the venereal infections *may* be produced by such accidents as using a public latrine, the seat of which is soiled by infectious matter, or by drinking from an infected cup." Dr. Gihon's courtesy might prevent him from expressing his opinion to a patient who consulted him for this disease, and urged such an excuse as the above, but every medical man knows what he would think of it, and how contemptuously he would treat in his own mind a statement that the patient had contracted the disease from "using a fork, that must have been unclean, in an oyster shop."

TRANSMITTED OR HEREDITARY SYPHILIS.

Dr. Gihon, p. 25.—"The drunkard who murders his wife and child is bound hand and foot; why shall we allow the libertine to torture his own wife and child with the life-long agony of incurable disease?"

"But not to die (the parents) till they have transmitted their fatal inheritance *to long lines of sufferers*."

The sufferings of the wives and children of libertines cannot be too deeply commiserated; but the present paper is an inquiry into their extent and preventibility by exceptional legislation. The drunkard who "murders" his wife or child is brought to justice when discovered, but the drunkard who simply ruins them, and occasions their life-long suffering or premature death from neglect and privation is beyond the reach of the law, and the same remark unhappily applies to the evil-doers under consideration as well as to the drunkard, the gambler, the spendthrift, or the simply brutal husband and father. We are obliged, therefore, to confine our inquiry to the accuracy of the picture, put before us by Dr. Gihon, of the "thousands of deaths," "the life-long agony," and the "long lines of sufferers" to whom "their fatal heritage has been transmitted."

In the year 1864 a Committee was appointed by the British Admiralty and War Office to take evidence and report upon the subject of venereal disease. It consisted of eight medical men of the highest eminence, and was presided over by Mr. Skey, President of the Royal College of Surgeons, and it examined 64 witnesses of special experience in this disease. Their report was published by the Government in 1867, and the evidence fills 584 pages. It is from this work the following evidence is taken upon the subject of hereditary syphilis:

DR. FRASER, surgeon to the 10th Hussars.—Ans. 2223. "I have very rarely seen hereditary syphilis among the children of soldiers supposed to be cured. I think only once or twice."

WM. ACTON, ESQ., the well-known author of the work "On Prostitution."—Ans. 3039–40. "Nine times out of ten a child brought to me and said to be syphilitic is not laboring under the complaint."

LANGSTON PARKER, ESQ., Surgeon to Queen's Hospital, Birmingham, author of a standard work on syphilis.—Ques. 3323: "Have you frequently seen new-born children affected with syphilis?" 3331: "And has treatment in a large proportion of cases been successful?" Ans.: "Yes; almost invariably." Ques. 3332: "Is the mortality among such children great?" Ans.: "No, not when so treated. As a rule they get well."

JONATHAN HUTCHINSON, ESQ., one of the highest authorities on syphilis.—Ques. 3439: "Is inherited syphilis amenable to curative treatment by mercury at say three weeks after birth?" Ans.: "Yes, it is cured in a sense, that is, procuring the disappearance of the symptoms." Ques. 3464: "Are these diseases curable, or do they leave permanent effects?" 3465: "Those of hereditary syphilis?" Ans.: "They get well." Ques. 3466: "Do any number of them remain and cause permanent blindness?" Ans.: "I should think not one in fifty cases. Perhaps one in twenty causes very material imperfection of sight, but the greater proportion of them clear away entirely; perhaps one in fifty causes total blindness of both eyes."

DR. W. HUGHES WILLSHIRE, Consulting Physician to the Royal Infirmary for Children—attached to it for about 15 years.—Ques. and Ans. 4420: "I have seen a great many cases of hereditary syphilis altogether." Ques. 4456: "Have you seen many fatal cases in children from the syphilitic disease?" Ans.: "Not many, considering the number of children I have seen; but I have seen fatal cases." Ques. 4457–60.: "Do the children generally get well under treatment?" Ans.: "Yes, as a rule." "What is the proportion of children who get well under treatment as compared to those who do not?" Ans.: "In the vast majority of cases that come under treatment every symptom disappears; at the same time, I could not undertake to say that there is no relapse in the children afterwards."

ERASMUS WILSON, ESQ., F.R.S., a high authority on diseases of the skin.—"Has had great experience in syphilitic and other diseases of the skin." Ques. 4585: "Have you seen these cases of syphilitic eruption frequently?" Ans.: "Very frequently." Ques. 4589: "Do you find them for the most part amenable to treatment?" Ans.: "Very much so." 4590: "All are curable, I believe, by the ordinary processes. They yield and get well, and one does not hear any more of them. I look upon it as so manageable a complaint in comparison with other diseases of the skin, that it is always a source of pleasure to me when I have to deal with syphilitic diseases." Ques. 4614: "Have you seen hereditary syphilis in children several years old appear for the first time?" Ans.: "Yes, I have, in the form of struma." Ques. 4627: "I think you stated that, in your opinion, the disease is either cured, or dies out, beyond that period?" Ans.: "Yes, it is either cured, or it dies out, in early periods of life: in the very early weeks of life syphilis is very destructive; it is apt to destroy life."

Sir James Paget.—Ques. 4875-6 : "Do you believe that syphilis pervades society a good deal, lurking occasionally in families?" Ans.: "I have been struck with the contrast which is presented between the amount of hereditary syphilis in the lower classes, on the one hand, and the middle and the upper classes on the other. I have not yet, to my knowledge, met with a single case in which the hereditary syphilitic teeth were well marked in any member of the middle or upper classes, nor have I seen in the upper classes any case that I could suspect to have been hereditary and of syphilitic origin, in the shape of ulceration of the palate or leg, with syphilitic nose, or any of those forms which are common among the poorer classes. I believe that poverty has very much to do with the degree in which syphilis is transmitted, and obtained by inheritance. I may mention another fact which shows how rare it is. At Christ's Hospital, where I examined a very large number of boys, I looked at the teeth of all, and I have not seen a single syphilitic tooth among them; and they come entirely from the middle classes. The resident surgeon told me, a few days ago, that he had found one doubtful case. I examined it, and am sure that those teeth were not syphilitic, but that they were accidentally notched teeth." Ques. 4917 : "Do you consider that those persons are in error who fail to see hereditary syphilis after the age of two years?" Ans. : "Yes, certainly ; I have not a doubt of its being inherited and manifesting itself at the age of 13 and 15."

Sir Wm. Jenner.—Ques. 5756 : "At what age did you principally see syphilis among children?" Ans.: "Principally in infants." Ques. 5768 : "Did treatment by mercury prove tolerably successful?" Ans.: "Very successful ; generally speaking there was a very large proportion that got well if they came under treatment at an early period after the appearance of symptoms." Ques. 5774: "Have you seen those children grow up and become strong and healthy like other children?" Ans.: "I have reason to believe that they have gone on well ; and I have no reason to think that their constitutions were afterwards affected. My belief is that they have grown into healthy children." Ques. 5776 : "Would you say that you have seen hundreds of cases of the disease in children?" Ans.: "I have seen, I should say, many hundreds. I looked once at a child and found that it was syphilitic ; it was past all hope, and the child died. It had never been under the influence of mercury ; but I feel sure that if it had been treated early with mercury, it would have recovered." (Continued in Ans. 5791.) "I told the young man who had treated the child that its death lay at his door, for I firmly believe if that child had been treated with mercury at an early period it would have recovered. I have no more doubt about that or about the influence of mercury, than I have about the influence of an aperient." Ques. 5803 : "The syphilis would wear out, I suppose ; whereas the other diseases (tubercle, struma, and rickets) would remain?" Ans.: "Just so." Ans. 5802: "The cases I have seen of syphilitic children were, in a large majority of cases, the first-born children after marriage, or the first and second." Ques. 5814 : "Is there anything which occurs to you with reference to the prevention of syphilis in the Army and Navy which you wish to state to the Committee?"

Ans.: "I think it is most important that the prevalence of the disease should be, if possible, modified—speaking from my knowledge of its influence on children, it is most terrible." (NOTE.—Compare this with the preceding questions and answers.)

DR. ARTHUR FARRE, Physician Extraordinary to H.R.H. the Princess of Wales.—Ques. 5834: "In what proportion of the cases so treated (with mercury) could you reasonably say that the treatment was successful?" Ans.: "The conclusion I came to, after many years experience, was that syphilis in infants was one of the most easily cured complaints that could be met with, provided the treatment was commenced sufficiently early, in which case the cure was as certain as of any complaint that could be named." Ques. 5835: "You place naturally unbounded faith in the effects of the mercurial treatment?" Ans.: "Certainly." Ques. 5844: "In such cases (deaths from hereditary syphilis) have you found the internal organs affected by syphilis?" Ans.: "Not generally. There was an idea that the supra-renal capsules and the thymous and thyroid glands were affected, and that there was a tendency to suppuration and softening of them. Such an idea did obtain, and I tried to work it out, but I could not satisfy myself that it was the case." Ques. 5878: "Can you give the Committee any idea of how many children are still-born with syphilis?" Ans.: "No; because it is so difficult to discover with certainty the cause of death in a fœtus in utero. *We conclude* that the majority of children who die in utero die from syphilis in some form."

DR. ROBERT BARNES, President of the Obstetrical Society, London.—Ques. 5908: "Do you think that cases of syphilis in newly-born children are amenable to treatment usually or occasionally?" Ans.: "The great majority of them, I think, show great signs of amendment under Brodie's plan (mercurial inunction). I find that that frequently has the effect of completely curing them." Ques. 5961: "Have you any facts to show, *pro* or *con*, that hereditary syphilis can pass into the third generation; or that it goes from generation to generation?" Ans.: "That is beyond my observation. I have no distinct case to which I could refer, in which I could see tertiary syphilis in hereditary-syphilitic children, or any remote form of syphilis."

THOMAS BYRNE, ESQ., Surgeon to the Westmoreland Lock Hospital, Dublin.—Ques. 6035: "Of late it has been remarked that the symptoms (of hereditary syphilis after apparent cure) have been reproduced at a later period of life. Have you had any experience of this?" Ans.: "Not the slightest. I have seen some of these babies when grown up, come to our hospital with their mothers, years afterwards, being then strong healthy children." Ques. 6036: "You think that the disease wears itself out?" Ans.: "Yes."

ACTUAL AMOUNT OF HEREDITARY SYPHILIS AS SHOWN BY THE STATISTICS OF CHILDREN'S INFIRMARIES AND OTHER HOSPITALS.

In the foregoing extracts from the evidence of the distinguished witnesses who were examined by the Venereal Commission, the estimated amount of venereal disease is in almost every case conjectural, not being based upon recorded cases, and it is styled

"large," "very large," "common," or "not common," according to the rough estimate of the speaker. In order to obtain as accurate an estimate as possible of its real prevalence among the poorer classes, the published reports of every Children's Infirmary in Great Britain and Ireland have been carefully collated, and the result is as follows :

Children's Infirmaries in England, Ireland, and Scotland, viz., London, Belfast, Birkenhead, Birmingham, Dublin, Edinburgh, Knightholm, Liverpool, Manchester and Sunderland, with 266,846 patients, show 3,783 cases entered as "syphilitic," giving 1.4 per hundred patients as the amount of hereditary syphilis. The evidence above quoted is almost uniformly to the effect that hereditary syphilis is generally cured with ease.

Mr. Erasmus Wilson states that about 3 per cent. of the cases of skin disease under his care have been syphilitic, but of these only a portion (he does not say how many) were children.

Mr. Jonathan Hutchinson estimates the total blindness resulting from syphilitic affections of the eyes in children at about one case in 50, and impared sight at about one case in 20 of those who suffer from this form of hereditary disease.

The *Liverpool Eye and Ear Infirmary* shows an average of 2.2 per hundred patients (children and adults) who have suffered from syphilitic disease of the eyes in seven years. The number of patients being 44,581, and the syphilitic cases being 960. As only a portion of these are children, the ratio of hereditary syphilis of the eyes will be much below 2 per cent.

The Reports of *two other Liverpool Eye Institutions*, with 14,500 patients, show 271 syphilitic cases, or 1.8 per cent., including both children and adults.

The *Brownlow Hill Skin-Hospital, Liverpool*, with 4,563 patients in six years, shows 256 cases of syphilitic diseases of the skin, or 5.6 per 100 patients, children and adults.

Sir James Paget testifies to the almost entire absence of hereditary syphilis among the upper and middle classes.

A Commission appointed by the House of Commons, on the motion of Mr. Memdella, the member for Sheffield, to examine into the amount of hereditary syphilis and other diseases among the children working in the factories, examined 10,000 children, and reported "an almost entire absence of euthetic (*i.e.*, venereal) diseases."

It would appear, therefore, from these hospital returns, obtained from London and all other parts of the Kingdom, that the amount of hereditary syphilis in the community is much less than has been imagined by many persons.

It is important to notice that nearly all the deaths from hereditary syphilis occur within the first year of life, and leave but a very small portion of children to carry their burden to a later age ; so that, although it is lamentable that children should be born with an inheritance of disease from their fathers' sins, it is a fact that by far the largest portion are either cured or die speedily, and the small proportion of hereditary syphilis in Children's Infirmaries shows how small is the number that has to bear the physical consequences of their parents' misconduct, even through the years of early childhood.

The Returns of the Registrar-General for 25 years show, that out of an annual average of 1201 deaths from syphilis, 1037 occurred within the first year of life, and only 78 between one year old and 15, or one child in 263,000 of population.

The report of Mr. Humphrey, senior clerk in the Registrar-General's office, which was published in the British Medical Journal, July 8, 1876, states that *there is no reduction of mortality from hereditary syphilis* in the stations under the C. D. Acts. Those persons, therefore, who desire the extension of such Acts, as a means of reducing the mortality among the innocent children of profligate men, have no grounds for their expectation of success, so far as our knowledge at present extends.

Upon the question of the transmission of syphilis to grandchildren or great-grandchildren (which appears to be implied by the expression "long lines of sufferers"), we possess no evidence of an official character. The only evidence on this question given before the Venereal Committee is that of Dr. Barnes, above quoted, who says he has no proof of it. Men of eminence at the present time attribute an enfeebled constitution in children to the deterioration resulting from syphilis in a previous generation, but they offer no evidence to show that it was further back than the father or mother. Upon this point we are without evidence, and the opinion that grandchildren inherit syphilis from their grandparents is entirely a matter of opinion, not of evidence.

Self-Contracted Syphilis.

Dr. Gihon, p. 25.—"How many thousands, blighted by venereal disease, have, during that same time ("this summer"), crawled from the wayside into obscurity, to linger silently for years, but just as certainly to die before their time."

Answer.—This paragraph appears to refer to the deaths resulting from syphilitic disease contracted by the patients themselves. The answer from the official returns for 25 years of the Registrar-General is, that only one person (male or female) dies yearly from this disease between 15 and 55 years of age in a population of 78,000 people; and that only one person dies yearly from syphilis beyond the age of 55 in a population of 108,000 persons. The "thousands" who crawl from the wayside, "in a single summer," to die before their time from this disease, appears, therefore, to be purely a figurative expression.

From a return to the House of Commons of all the deaths from syphilis in the *Workhouses* in England and Wales, during the year 1875, it appears that the deaths from syphilis, at all ages, in the workhouses—that is, among the lowest classes of society are only . . . . . eight per million inhabitants.

And the deaths from syphilis, at all ages, in the workhouses, even of Middlesex, Surry and London, are only , ten per million inhabitants. In the case of workhouse deaths there is no inducement to conceal the real cause, and the above, therefore, represents the true mortality, if any returns are to be accepted as true; and the proportion of deaths is even lower than that recorded for the general public by the Registrar-General.

REMEDIES SUGGESTED BY DR. GIHON.

Page 32.—"To protect the pure and guileless against the dangers of venereal disease it is only necessary to establish a well-organized sanitary service, with its agents or inspectors in every hamlet, village, town, and city of the country, subordinating them to county superintendents, controlled by Municipal and State boards of health. Let these agents track syphilis to its lair, and whether in man or woman, in any way, at any cost, let them make it impossible for another human being to come within its baneful influence. . . Why should not every case of this evil be reported, and its victim cared for, in the lock hospital if need be, if not for his own sake for the sake of those whom he cannot touch without defiling?" . . . .

"There is an army of doctors overspreading this country, and annually recruited by thousands. Why not transform these men, of whom so many idly and *hungrily await the prey* stricken down for them by disease, into busy workers, keenly on the scent to avert that which now they cannot but welcome?" . . . .

"There can never be too many sanitary doctors in this land . . . but it is folly to exterminate only diphtheria, small-pox, scarlet fever, and typhus, and let syphilis (the most prolific mother of evil of them all) send forth her brood of whelps, to be 'the cause of more bodily and mental misery than all other shapes of human error combined.'"

AN ARMY OF DOCTORS, "waiting idly and hungrily for the prey stricken down by syphilis," overspreading the country in every city and hamlet; with power to track every case of syphilis, whether in man or woman, to its lair, and to report it; to shut up the victim, if need be (whatever that may mean), in a lock hospital. This is the remedy proposed by Dr. Gihon to the American Public Health Association of America, and accepted with "applause, hearty and prolonged." Three years since Dr. Marion Sims proposed to the Medical Association of America, at its meeting in Philadelphia, that every ship entering the United States should be subjected to medical examination before its tenants were allowed to land; and (while disclaiming "class legislation" in *words* in the strongest terms) he proposed that the sailors *before the mast* should be examined before landing, to prove their freedom from venereal diseases, *but the officers should be exempt* from examination; and that the *steerage* passengers should be obliged to submit to examination, but the *cabin passengers should be free.*

Dr. Marion Sims informed his audience that the plan was so simple and easy that the only wonder was it had not long since been suggested and adopted; and Dr. Gihon says "it is only necessary" to establish his army of hungry doctors in every city and every hamlet, with authority to track out the most hidden secrets of every family, and seclude the diseased in a lock hospital, and the object would be accomplished. When a race of men grows up who, if in the steerage or before the mast, are willing to submit to a degrading examination from which the officers and cabin passengers are free, and are also content to be detained in hospital, or sent back to their own country (which was part of Dr. Marion Sims's proposal), then perhaps his plan may be found easy of execution. And when the virtuous members of a nation of free men are content to subject themselves—in

every city and hamlet—to an army of hungry doctors for the purpose of limiting the spread of disease, voluntarily contracted by the profligate members, then, perhaps, Dr. Gihon's proposal may be practicable. But, in the meantime, to those who have carefully studied the history of past legislation as well as the proposals of modern times, they both present the aspect of recommendations which could only have been made by enthusiasts, who were ignorant of the past, and had never considered the insuperable obstacles that would spring up the moment it was attempted to bring either of them into practice.

To all that Dr. Gihon says about the duty of society to prevent the moral evils and the public scandals, so forcibly depicted on page 27 of his address, we most heartily respond; but the wider our study of the history of the past the more hopeless do we feel that legislation can affect what nothing but a more elevated moral tone in society at large can accomplish; and we would earnestly press upon the Committee, appointed at the close of Dr. Gihon's address, a careful study of the pamphlet on "Governmental experiments in controlling prostitution" (Trübner and Co., Paternoster Row, London), before they report on the question submitted to them.

Actual Results of the Contagious Diseases Acts in the British Army and Navy.

The sanitary results of these Acts upon the Army and the registered prostitutes have just been investigated by the Select Committee of the House of Commons, but the results in the Navy have not yet been investigated. The evidence thus far before the Committee is the following as regards the Army:

Secondary Syphilis has not diminished, but has rather increased, since 1866, the date when the Act was passed.—(Sir Wm. Muir).

Gonorrhœa has not been benefitted.—(Sir Wm. Muir).

Primary Venereal Sores have continued to fall in the stations under the Acts at a lower rate of improvement than before the Acts were put in force.—(Dr. Nevins, 97-512-514 and table).

The saving of efficiency since the Acts have been in complete operation, which the Army Reports show, in *the stations under them as compared with the stations not under them*, is rather more than six-tenths of a man per 1,000, or 32 men yearly in the protected Army of 50,000 men. This saving is on the assumption that the whole of it is due to the operation of the Acts; but as the actual saving has been the greatest in the *non*-subjected stations, and many beneficial agents are at work in reducing disease in the subjected stations in addition to the Acts; it is a questionable point how many of these 32 men are really due to the Acts, and how many to the other beneficial causes. Sir Wm. Muir, before the Select Committee, claimed that 190 *would* have been saved *if* something had happened that has not happened; and Mr. Lawson also claimed that above 300 *would* be saved *if* something else had happened; but neither of them professed to say that either 190 or 300 had actually been saved.

Sanitary Results of the Contagious Disease Acts among the Registered Prostitutes.

Venereal disease has been higher by nearly 20 per cent. on the average of the last twelve years than they were in 1866, when the

registration was first commenced.—(Captain Harris's Annual Report, 1878, p. 5).

Disease has been rising for the last three years in Plymouth, for five years in Portsmouth, for eight years in Aldershot, Colchester and Chatham, and for seven years in Greenwich.—(Select Committee, 2, 292).

It is as high at present as it was six or eight years since in Woolwich, Shorncliffe and Winchester, and in only three out of the 17 districts under the Acts has disease upon the whole fallen among the prostitutes, viz., Windsor, Dover and Gravesend.—(Select Committee, 2, 292).

BRITISH HOME NAVY.

Secondary syphilis has been higher by 0.29 per 1,000 on the average of the last nine years than it was in 1869.

It has risen from 12.8 per 1,000 to 13.09.—(Computed from Navy Reports).

Primary venereal sores have only fallen at the rate of 0.63 per 1,000 men (less than two-thirds of a man per thousand) on the average of the last nine years, since the Act was universally applied.—(Computed from Navy Reports).

Gonorrhœa has much more than doubled in amount since the Act was first put in force in 1866. It has risen year by year as the Act has been more and more generally applied, and the *average duration* also of the cases has risen from 18 days in 1866 to 27 days in 1878. The *loss of service* from this disease has risen from an average of 18,232 days for six years previous to the Act of 1866 to an average of 35,435 days for the last six years of the universal application of the Act. The *men constantly in hospital* have risen from 50 for six years before the Acts to 100 for the last six years.—(Computed from Navy Reports).

In five ports specially selected to show the beneficial result of the Acts, viz., Plymouth, Portsmouth, Queenstown, Southampton and Dartmouth (ordered by the House of Commons to be printed in 1877) *secondary syphilis has risen* from an average of 12.47 per 1,000 to an average of 13.06 during the last five years.

Gonorrhœa has risen from 28 per 1,000 to 63 per 1,000 during the same period, and *primary syphilis has only fallen* from 34.7 per 1,000 to 30.5 per 1,000.

The *number* of men *constantly in hospital* from venereal diseases in these five ports *is higher by* 349 men yearly than it was before the Acts were universally applied.

J. BIRKBECK NEVINS, M.D., LONDON:

One of the witnesses examined by the Select Committee of the House of Commons; President of the National Medical Association for the Repeal of the Contagious Diseases Acts.

BAKING POWDERS.*

By Henry A. Mott, Jr., Ph. D., E.M.

Alumina salts are introduced into the stomach in two ways—first by the adulteration of bread with alum, and second by the substitution of alum for cream of tartar in baking powders.

The introduction of alum into flour for various purposes has been a trick of the baker for the past one hundred years; fortunately its introduction is limited now to a few unscrupulous bakers—as in England, France, and Germany, it is an offense punishable by fine and imprisonment, to use alum in any connection with articles of food.

That alum is a poison, numerous experiments have demonstrated; and I believe it would be difficult to find a scientific man, who has properly investigated the subject, who would be willing to express any other opinion.

When alum is used in flour in the manufacture of bread, some of the alum is decomposed by the phosphates of the flour and phosphate of alumina, basic sulphate of alumina, and some unaltered alum is left in the bread. From this fact much discussion has at various times arisen, but it has of course been entirely theoretical. In all my researches—it is certainly a notable fact—I was unable to find one scientific man who was willing to recommend the use of alum in bread making. On the contrary, I find the leading savants of the world denouncing its use in the strongest terms. All are agreed that the continued use of alumed bread will produce headache, indigestion, flatulence, constipation, diarrhœa, dysentery, palpitation, and urinary calculi. I will simply quote from Dr. Gibbon, who says: "Its (alum) use in the manufacture of bread is injurious to health, and concurs indirectly with other things in increasing the mortality, especially of young children, the staple article of whose dietary is bread. The fatal diarrhœa of infants under three years of age may also have arisen from or have been aggravated by this cause." The introduction of alum as a substitute for cream of tartar in baking powders is a recent fraud on the public, and, strange to say, has been upheld by a few scientific men, who, it would be supposed, would condemn its introduction in the strongest terms; but unfortunately for lack of time to properly investigate the subject, have been influenced away from the proper line of action, which should be not to see how near it is possible to poison a man in his food and not to do it—but rather how far it is possible to keep from poisoning him. This is not only my opinion, but it is the opinion of the leading scientific men of this country, such as Chandler, Barker, Johnson, Morton, Hays, Willard Parker, Alonzo Clark, Wm. A. Hammond, Ryland T. Brown, J. A. McCorkle, and J. H. Raymond, of the Brooklyn Board of Health, and many others.

It hardly seems necessary for any experiments on animals to de-

---

* Abstract of Paper on the Effects of Alumina Salts on the Gastric Juice in the Process of Digestion.—Experiments on twenty-two Living Animals. Read before the American Chemical Society, Jan. 8, 1880.—*Scientific American Supplement*, No. 214.

cide a question of this nature so that the use of alum baking powders can be condemned, for a thorough scientific investigation of the subject can lead to no other conclusion. Still, as Prof. Patrick, of Kansas, conducted some elementary experiments on cats to sustain his position in stating that alum baking powders are not injurious to health, and as such experiments were interpreted by him favorably—although I hope to show, and am quite positive I will, that his experiments are most detrimental to his views, and most favorable to the side which condemns the use of alum baking powders—I thought it advisable to conduct an exhaustive series of experiments on dogs in search of the truth, believing that such an investigation would meet with the approbation of the public.

None but strong, healthy dogs were selected. The breed, age, food, color, and weight of every dog was carefully noted. Each dog was then consigned to a stall, and securely chained, and they all received a number, from one to sixteen. I commenced my experiments on the 9th of September, and finished december the 3d. My assistant was with the dogs from morning until night, and never left the animals without first securely bolting and locking the dog house. No stranger was allowed to enter the house unaccompanied either by myself or by my assistant, and the dogs never received a mouthful of food or anything else from any one except my assistant and myself.

Dog No. I., on the morning of the 9th of September, was given 8 biscuits, at ten minutes past eight o'clock. The biscuits were made by myself as follows :

1 quart sifted flour ; 20 teaspoons alum baking powder ; 2 cups of water ; 1 tablespoon of butter ; 22 biscuits made, weighing 27 ounces; time of making 20 minutes.

At half-past eleven, just three hours and twenty minutes, the dog was taken very sick, vomiting profusely—his vim and brightness of eye had departed, and he trembled considerably in his limbs.

At four o'clock, five more biscuits of the same nature were given, but he would not eat them.

The next morning eight more fresh biscuits were given him ; he ate only a part of one. During the day previous he was quite loose in the bowels; but he had now become very constipated, and it was only with great effort and pain he was able to relieve himself for several days.

On September 11, as he would not eat the biscuits alone, they were mixed with meat ; this he ate, but remained very dejected in spirits and extremely constipated.

To dog No. V. the same food was given. At 8:15 on September 9, 8 biscuits, made and described above, were given. At 12:15 the dog became very sick and vomited profusely. At 4 P. M., five more biscuits were given him, but he would not eat. He was very constipated toward night. On the following morning eight buscuits were given him, which he ate in part during the day ; in the afternoon he was very sick, vomiting at 4:30 and again at 5:45 P. M.

Experiments were next made, using only half the quantity used above of an alum baking powder.

The biscuits were made as follows : 1 quart sifted flour ; 10 teaspoons alum baking powder ; 1¼ cups of water ; 1 tablespoon of but-

ter ; 27 small biscuits, weighing 25½ oz.; time of baking, 11 minutes.

Three dogs were fed with biscuits thus made, with the following results :

Eight biscuits were given to dogs Nos. II. and VI. in the morning; in the afternoon dog No. II. was very loose in his bowels, and dog No. VI. very constipated. Five more biscuits were given in the afternoon and eight more the following morning, part of which were eaten. Both the dogs then were extremely constipated and apparently quite sick, although they did not vomit. To-day dog No. IV., in perfect health, was then given three biscuits, which were eaten at nine o'clock. At 10:35 A. M., the dog became quite sick and vomited. In the afternoon and next morning more biscuits were given him, but he would not eat.

This demonstrates that some animals are more susceptible to the action of poisonous substances than others.

It now became necessary to know if the same effects would not be brought about by using the same quantities of cream of tartar powder. I therefore conducted a series of experiments to arrive at this point. Three dogs were experimented on.

The biscuits were composed as follows : 1 quart sifted flour ; 20 teaspoonfuls cream of tartar baking powder; 2 cups of water; 1 tablespoon butter ; 20 minutes baking ; 26 small biscuits ; weight, 27 oz.

The biscuits given to dog No. IX. were twice as large—only 12 being made instead of 26, therefore each dog was given as many biscuits as he would eat—without in any way affecting them. Their bowels were not in the least affected. Each dog ate sixteen biscuits the first day, eight in the morning and eight at night. Dog No. X. did not eat but ten biscuits ; the next day each dog ate the biscuits again with appetite. Dog No. XVII. was fed four days on the biscuits, and ate same with appetite, without showing any signs of sickness.

These experiments clearly demonstrate that the salts left in the biscuit when a cream of tartar baking powder is used, are perfectly harmless ; but when an alum baking powder is used are very dangerous, as in every case where dogs were fed on biscuits made with such powders, the dogs were made very sick, causing them to vomit profusely, lose all energy, and show weakness in their limbs.

The next series of experiments were to ascertain what effect would be produced by feeding dogs with hydrate of alumina mixed in with their food, as also phosphate of alumina. To two dogs, Nos. XV. and XVI., hydrate of alumina was thus given.

To dog No. XVI., on the 13th of September, was given 1 oz. of precipitated hydrate of alumina (54½ grains, Al_2O_3, $3H_2O$) mixed with meat at a quarter-past eight in the morning. At 12:30 the dog became quite sick, and vomited ; at ten minutes of six in the afternoon ¼ oz. (109.2 grains) more of hydrate of alumina in meat was given to the dog, and at twenty minutes past six he was again taken quite sick and vomited ; he vomited also considerable during the night, the meat being vomited up *undigested*. The next morning ¼ oz. (109.02 grains) more of hydrate of alumina mixed with meat was given to the dog, and he vomited a short time afterwards ; he was very constipated, his last stool being quite black. At three

o'clock 109.2 grains more were given him, and he was again taken sick, vomiting, and showing great weakness in his limbs. The next day at three o'clock he was given ¼ oz. more of hydrate of alumina mixed with meat, when he was taken extremely sick, vomiting several times, and showing great weakness in his limbs and loss of ambition, the brightness of his eye having disappeared; he vomited during the night, and could not be induced to eat any more the next day or the day following.

To dog No. XV. was given ⅜ oz. (163½ grains) of hydrate of alumina mixed with meat. The dog was taken very sick in about two hours, and vomited just two hours and fifty minutes afterwards; he also vomited profusely during the night. At 4:30 the next day ½ oz. (218 grains) of hydrate of alumina mixed with meat was given the dog, but he ate only about one-half of it. He was taken very sick a short time afterwards, vomiting, and showing great weakness and restfulness. He would not eat any more after that day. It may be well to state here that hydrate of alumina is almost tasteless, and it was for this reason the dogs ate it as well as they did when mixed with meat. To two other dogs hydrate of alumina was given only once, and in each case the dogs were made sick, and vomited.

To dog No. IX. was given phosphate of alumina mixed with meat. On Sept. 18, in the morning, 3 oz. of precipitated phosphate of alumina (containing 75 per cent. of water, dried between blotting paper) was mixed with meat and given to the dog. This was eaten during the day, but the dog did not vomit, although he was evidently quite sick. The next morning 2 oz. more of the precipitated phosphate of alumina mixed with meat was given him, which was all eaten, and although the dog did not vomit, he was quite sick, showing less life than usual, and his eye not being as bright.

From this last experiment it was clearly shown that the alumina in biscuits made with an alum baking powder must be, to a very great extent, in the condition of hydrate of alumina—as the phosphate, although causing the animal to feel unwell, did not make him vomit. In every case, as has been stated before, when biscuits were given to a dog made with less than seven times the quantity of an alum baking powder usually employed, the dog vomited profusely, and was made very sick, trembling in his knees; and this was the case when hydrate of alumina was given, even in such small quantities as ⅓ of an ounce, or 54½ grains. Experiments were then made to see if the action of hydrate of alumina in any way differed from the action of alum itself.

To dog No. XIII. was given 2 oz. of burnt potash alum mixed with meat at 8:15 in the morning. The dog ate only the meat, leaving the alum untouched, with the exception of what adhered to the meat, which was much less than ¼ of an ounce. At 9:30 he was very sick, trembling in his limbs, losing all vim and brightness of eye, and vomited. At 9:45 he vomited again. The next day some fresh meat was mixed in with the alum; when he ate part of the meat he was made very sick again, and vomited considerably. He would not eat any more after this.

To dog No. XIV. 1 oz. of ammoniac alum was mixed with meat and fed. At 8:15 only about ⅛ oz. was eaten. At 9:45 he was

made very sick, the same as dog XIII., and vomited; he vomited again at 9:45, and again at 9:55, and was a very sick dog, showing no inclination to eat or play; his brightness of eye had entirely disappeared. To two other dogs alum was given with the same results. From these experiments it will be clearly seen that hydrate of alumina acts in the same manner as alum, causing the animal to vomit profusely, show great weakness in the limbs, and loss of ambition.

The next experiments conducted were to ascertain what effect the presence of alum, hydrate of alumina, phosphate of alumina, and basic sulphate of alumina had on the solvent power of the gastric juice. It was necessary, therefore, to procure some gastric juice for experiment. I therefore sent several dogs to Prof. J. W. S. Arnold, who inserted a canula in each of them. When the dogs were in a perfectly healthy condition, Prof. Arnold sent me some gastric juice, which was produced by tickling the lining of the stomach of the dogs with a feather or glass rod, which caused the gastric juice to flow out of the fistula into a receptable placed underneath the dog to receive it. This and other methods were used to excite the flow of the secretion.

In conducting the experiments with the gastric juice, I was greatly assisted by the friendly services of Prof. Robt. Schedler. Four samples of gastric juice were received.

Experiments were then made with this sample as follows:

To three grammes of juice was added 0.0403 grammes of fibrine,* and the mixture was kept at the temperature of 95–100° F. for half an hour, when all the fibrine was dissolved.

To three grammes more of the juice were added 0.5 grammes of hydrate of alumina (precipitated and dried between blotting paper), and then 0.0403 grammes of fibrine was added. The mixture was stirred and kept at the temperature of 95–100° F. for two hours, and from 70–80° F. for twenty-three hours. Digestion of the fibrine took place at the start, but was soon arrested, only one-quarter of the fibrine being dissolved.

To three grammes more of the juice were added 0.500 grammes of alum, and then 0.0403 grammes of fibrine, and this was treated the same as in the last experiment. In this case about three-quarters of the fibrine was dissolved at the start, and then further digestion was entirely checked, although it remained in contact twenty-three hours.

These experiments are very valuable, as fibrine is so readily dissolved. They show that both alumina, hydrate and alum can check the digestion of such an easily digested substance as fibrine. They show, therefore, how dangerous it is to introduce these two salts into our stomachs, if we do not wish to excite indigestion and dyspepsia.

Three experiments were then conducted with prepared boiled white of eggs. To three grammes of gastric juice were added 0.25 grammes of albumen, and the juice was kept at 95–100° for two hours, when half of the egg was dissolved. Three more grammes of juice was then added, when in two hours all the egg was dissolved. This showed that 100 grammes of gastric juice would dissolve 4.16

*The fibrine was prepared by Prof. Arnold from the blood of a dog.

grammes of albumen. Lehmann claims it will dissolve 5 grammes, and Schmidt 3.95 grammes, although the latter authority states it may dissolve more.

To three grammes more of gastric juice were added 0.25 grammes precipitated hydrate of alumina (really only 0.031 grammes, $Al_2O_3 3 H_2O$), and then 0.25 grammes albumen; the mixture was kept at the temperature of 95–100° F. for two hours, and in contact fifteen hours, and not a particle of the egg was dissolved.

To three grammes more of the same juice were added 0.25 grammes of alum, and then 0.25 grammes of albumen, and this was likewise treated; but after fifteen hours contact not a particle of the albumen was dissolved. These experiments were duplicated.

The albumen used in the experiments was the boiled white of egg; it was first macerated in a mortar with pure water, then dipped in a solution of one drop of hydrochloric acid to 2,400 drops of water; it was afterwards macerated again in the mortar with pure water, then dried between filter paper and weighed.

The three first experiments demonstrate beyond a shadow of a doubt that both hydrate of alumina and alum check the digestive properties of the gastric juice, and render it incapable of digesting even the most digestible substances; and the last three experiments demonstrate that the digestive power of the gastric juice is entirely destroyed by hydrate of alumina and alum, so far as dissolving the more indigestible substances, such as the boiled white of egg.

The alumina renders the pepsin entirely inactive, probably converting it into a species of leather, and in the stomach the lining membrane and cells are probably thus affected, thereby destroyed or rendered incapable of performing their normal functions.

Experiments were next made with phosphate of alumina and basic sulphate of alumina. These experiments showed that all alumina salts interfere with the powers of digestion, having the property of rendering the pepsin inactive.

My next experiments were to ascertain whether alumina could be found in the various organs of the body if a dog was fed with hydrate of alumina. I therefore secured a dog from Prof. Arnold, which had a gastric fistula through which the hydrate of alumina suspended in a water solution was introduced direct into the stomach by means of an ordinary syringe.

On the 21st of October, at 8:30 A. M., 5 oz. of precipitated hydrate of alumina and 2 oz. of meat were mixed together and given to the dog. He ate only one-third of the mixture; at 11:35 his bowels were very loose, and at 12:40 he vomited; at 12:55 he vomited profusely again, the meat coming up undigested.

At 5 P. M. $\frac{1}{20}$ of an ounce of hydrate of alumina, suspended in solution, was injected directly into the stomach. The dog vomited during the night. The next morning, at 9:25 A. M., one ounce of hydrate of alumina was injected into the stomach and the dog was given meat to eat. He vomited at 1:30 P. M., and was very constipated; vomited at 2 P. M., and again at 2:15 P. M. At 3 o'clock, one ounce more of the hydrate of alumina was injected; at 5 P. M. he vomited; he also vomited during the night and was very constipated. At 8:45 the next morning about one ounce more of the hydrate of alumina was injected; he vomited at 11:45 and again at 12:55. At

4:55 P. M., ½ ounce more of hydrate was injected, the dog vomiting during the night. The dog was now so completely under the influence of the hydrate of alumina that I fully believe he would have died if any more alumina was injected. He was a very sick dog, trembling in his knees when he stood up and wanting all ambition and vim. His eye was dull, all the brightness had departed. On the next morning, at 8 o'clock, I killed the dog, collected some of his blood, and took his liver for analysis. I separated from the blood by analysis a considerable quantity of alumina, as also from the liver. The silica and phosphate of lime were first removed before the alumina was precipitated.

My next experiment was on a black and tan dog in Prof. Arnold's laboratory. I supplied Prof. Arnold with freshly precipitated hydrate of alumina, and he fed the animal with the same for four days, when the dog was killed. I received the kidney, heart and blood for analysis, in all of which I separated out alumina in large quantities. Professor Arnold examined the stomach and intestinal canal, as also analyzed the spleen and liver. His report is given below.

The next dog experimented on was also a black and tan. To this dog Prof. Arnold fed precipitated phosphate of alumina (containing 75 per cent. of water), mixed with meat. On killing the dog, I took the spleen and liver for analysis, and separated out large quantities of alumina from them. Professor Arnold examined the stomach, etc., and also analyzed the heart.

Report of Prof. J. W. S. Arnold:

This is to certifiy that I have supplied Dr. Henry A. Mott with a number of samples of gastric juice from the dog, the juice being pure and in the normal condition.

I have also made a number of gastric fistulæ in dogs; some of the animals I delivered to Dr. Mott, from others I obtained the juice with which I supplied him.

I fed a dog upon meat mixed with precipitated hydrate of alumina (containing much water); the amount of this hydrate of alumina given the dog was 12 ounces. I killed the animal, and examined the viscera. The duodenum was highly inflamed in its upper portion. The spleen and liver, upon analysis, showed the presence of a considerable quantity of alumina. The heart, kidneys and samples of the blood from the animal were given to Dr. Mott for analysis.

I fed another dog with precipitated phosphate of alumina (containing much water), mixed with meat, to the amount of five ounces of this phosphate of alumina. Upon killing the animal, both the stomach and duodenum were found very much congested. Upon testing, the heart showed the presence of considerable alumina in its tissues.

Dr. Mott received portions of liver and spleen for analysis.

I also prepared microscopical slides of a dog's stomach in a healthy condition, and of the stomach of the dog fed with precipitated phosphate of alumina in a congested condition. These I sent to Dr. Mott.

J. W. Arnold, A.M., M.D.,
Prof. Physiology and Histology, Med. Dep't
University of New York.

From these elaborate experiments it will be seen that both hydrate of alumina and phosphate of alumina are very injurious substances to introduce into the stomach, as these are sure to produce acute inflammation.

In this connection I would state that the Board of Health of Brooklyn, after carefully investigating the adulteration of baking powders with alum, at a meeting of the Board, March 25, 1879, the following was adopted :

"*Whereas*, Careful analytical examination of the various baking powders sold in this city proves several of them to contain alum; and,

Whereas, The introduction of alum into the human system in this form is injurious to health ; therefore,

Resolved, That the Legislature be requested to pass an act prohibiting and punishing the use of alum in baking powders, or in any other mixture intended to be used in the manufacture of bread or other article for human food."

MENU.

Alum in Bread.—The article on Baking Powders, on other pages of this number, is worthy the attention of all readers.

Ostensibly, baking powders, for the most part, have for a basis cream of tartar and carbonate of soda ; but cream of tartar itself is notoriously subject to adulteration, insomuch that it is kept by wholesale dealers in distinctive grades, the lowest being *grocers'*—commonly adulterated with an earth which contains alum—the kind retailed to mix with an equally impure carbonate of soda as extemporized baking powder for home-made bread.

To discover whether bread is adulterated with alum, soak a portion in water, and add to the water in which the bread has been soaked solution of chloride of lime, a little at a time, carefully stirring; if alum is present the mixture will be pervaded with milkiness, otherwise the liquid will remain limpid. To detect alum in flour is more difficult.*

The only safe course for housekeepers is to use flour and baking powders of known brands ; to eschew all extemporaneous baking powders especially ; and use such only as are known to be chemically pure and free from all injurious substances. And in this connection, without any reflection on such as have not been brought to our notice, we feel fully warranted in recommending the brand we have long used in our own household—the "Royal Baking Powder"—which we have frequently examined, and always without finding any impurity whatever.

Detecting Flour Adulterations.—Prof. Dr. Nessler recommends the following method for detecting the presence in flour of barytes, gypsum, fine sand or chalk. A thin paste is made of the flour which it is required to test, with ten parts weight of water to one part of flour, and then adding the same quantity by measure of sulphuric acid, little by little, stirring the paste well all the time. The

* For a full account of adulterations and tests in bread and wheaten flour, see "*Bread, Tests and Adulterations*," THE SANITARIAN, vol. I., pp. 145–154.

fluid becomes heated more or less in proportion as the acid is added quicker or slower; and in every case the pure flour dissolves perfectly, or at least so far that no sediment is formed, while the barytes, gypsum and sand fall to the bottom of the vessel used, and can here be easily detected. If the flour is adulterated with chalk the fluid will effervesce as soon as the acid is added, as the carbonic acid contained in the chalk is expelled by the stronger sulphuric acid, while the chalk is changed to gypsum, which gradually settles on the bottom of the vessel. By this process the adulteration of flour with two per cent. of mineral matter has been repeatedly detected. It should be remarked that if the acid is slowly added the fluid remains almost colorless, while the color becomes a dark brown if the same is quickly poured in. In the former case the flour is more perfectly dissolved, and the fluid becomes more transparent, so that the undissolved mineral substances can be more easily discovered.

Poison in Fruit Jars.—Four persons were poisoned recently in Brooklyn from eating canned cherries. Fortunately they all recovered by prompt treatment. Prof. Geo. W. Plympton made an analysis of the fruit left, and found the poison to be a salt of zinc formed by the action of the acid in the cherries on the zinc cover of the jar. The preserving had been done with scrupulous care, and the jars were of a kind in common use; and the contents of several had been eaten without any unpleasant effects. On examining some which had not been before opened, one having a zinc top with a porcelain lining was selected, and in it there was no indication of zinc. But on pouring a portion of the syrup of this jar into the zinc cover of the first, and warming it over a water bath for three-quarters of an hour, the solution promptly yielded to the test for zinc.... The case is not without parallel, and the public should learn that the use of zinc or galvanized iron in the preparation or preservation of canned fruits or vegetables is not free from danger.

The Flavor of Meat.—M. Monclar, a noted agriculturist in France, has suggested a singular plan for varying the flavor of meat. He imagines that by feeding cattle, sheep, pigs and poultry in a particular way, or rather by flavoring their food in various ways, their flesh may be rendered much more agreeable to the palate than it often is; and there can be no doubt that he is substantially right. Thus, for instance, it is well known that poultry which have been fattened upon food containing a slight admixture of chopped truffles are far better eating than those chickens which have been stuffed or larded with truffles after they are killed. It is only natural that such should be the case, for the flavor of the truffle that is consumed by the chicken permeates the whole system, which it cannot do when simply placed in the carcass. M. Monclar instances cases in which hares killed in a wormwood field, larks shot in a cabbage field, and eggs laid by hens which had eaten diseased silkworms, had such a nauseous taste that no one could touch them; while upon the other hand some ducks and fieldfares which had fed upon sprigs of juniper had a delicious flavor. He has made several experiments—among others, three upon tame rabbits, which he fed with the waste of aniseseed, with barley and bran containing a slight flavoring of juniper,

and with barley and bran containing a little essence of thyme. In each case he found that the flesh of these animals was far better eating than that of rabbits fattened in the ordinary way, and yet that there was no trace of anise-seed or juniper in the taste. His conclusion is that cattle, sheep and pigs might be fed in the same way, and that by varying the flavoring matter the beef, mutton and pork might be made to have several different tastes.—*Caterer.*

Salad Dressing.—The following ingredients, combined as directed, will be found to form an excellent dressing: One teaspoonful of mixed mustard, one teaspoonful of powdered sugar, two teaspoonfuls of salad oil, four tablespoonfuls of milk, two tablespoonfuls of vinegar, cayenne and salt to taste. Put the mixed mustard into a salad bowl with the sugar, and add the oil drop by drop, carefully stirring and mixing all these well together. Proceed in like manner with the milk and vinegar, which must be added *very* gradually, or the sauce will curdle. Add the seasoning, when the dressing will be ready for use. In mixing salad dressings it should be borne in mind that the ingredients cannot be introduced to one another too gradually, or stirred too much. With regard to vegetables, these should never be added to the sauce very long before they are wanted for the table; the dressing, however, may always be prepared some hours before required. Where salads are much in request, it is a good plan to bottle off sufficient dressing for a few days' consumption, as thereby much time and trouble are saved. If kept in a cool place it will remain good four or five days.—*Caterer.*

Macaroni Pudding.—The following will be found an excellent recipe for making the above pudding: Simmer until tender ¼ lb. of the pipe sort in a pint of sherry, the rind and juice of two lemons. Put the whole into a dish with one pint of milk, six eggs, ½ lb. white sugar, ½ oz. allspice, ½ lb. sultana raisins. Bake with a paste over the top; apple sauce is a great improvement.—*Caterer.*

Apple Charlotte.—Instead of using slices of thin bread and butter, as in the best known recipes, the following will be found more delicate: Well butter a medium-sized pie dish, sprinkle sifted sugar over the butter, and then put a layer of slices of apple, a good sprinkling of sugar, a few grains of nutmeg, and then a layer of very finely sifted breadcrumbs. Over this drop some tiny pieces of butter, and then take apple, sugar, nutmeg, and breadcrumb as before. When the dish is full, beat up two or three eggs (according to the size of the pudding) and pour the liquor over the top, put pieces of butter all over the pudding and bake it thoroughly in a hot oven. A medium-sized pudding will take from an hour to an hour and a quarter, as the apples ought to be thoroughly cooked and the whole well browned. When it is done, turn it out whole on to a hot dish, sprinkle finely sifted sugar over it and serve. Lemon flavoring can be added if desired. The juice of a lemon can be sprinkled over the breadcrumbs, or be beaten up with the eggs, but many people prefer to have only nutmeg with the apples. If the apple is cut into very tiny slices the pudding can be prepared in patty pans, and it will not take so long to cook; but the disadvantage of this plan is, that as the pans are generally rather shallow, the pudding is more dry than when baked in one pie dish.—*Caterer.*

Death-rates per 1,000 inhabitants, annually, from all causes; and from causes which are usually preventable. Condensed from report of National Board of Health Bulletin.

Mortality in United States.	Population.	Total No. of Deaths from all Causes.	Deaths under 5 years.	Annual Death-rate per 1,000.	Consumption.	Diphtheria and Croup	Diarrheal Diseases.	Typh'd & Typhus F'rs	Malarial Fevers.	Scarlatina.	Yellow Fever.	Measles.	Puerperal Diseases.	Small-Pox.	Whooping Cough.
Atlanta.—4 weeks ending April 17th	39,000	35	15	3.48	1	....	2	....	..	....	....	....	1	....	..
Baltimore.—4 weeks ending April 17th	400,000	570	236	18.5	104	29	13	6	5	29	....	....	2	..	3
Boston.—4 weeks ending April 17th	375,000	599	200	20.7	109	40	3	8	..	2	....	....	12	..	13
Brooklyn.—4 weeks ending April 17th	564,448	907	359	20.9	137	68	8	6	13	11	..	37	10	..	8
Cambridge.—4 weeks ending April 17th	50,000	63	18	18.8	18	1	1	....	..	....	....	....	1	....	..
Charleston.—4 weeks ending April 17th	57,000	121	48	27.4	16	2	4	9	..	....	....	1	....	..	6
Chicago.—4 weeks ending April 17th	537,624	807	420	20.2	70	84	13	8	6	30	..	32	11	4	8
Cincinnati.—4 weeks ending April 17th	280,000	307	141	18.4	52	6	3	5	..	11	..	3	1	..	10
Cleveland.—4 weeks ending April 17th	175,000	252	110	18.7	14	8	4	1	2	35	..	..	6	..	6
Dayton.—4 weeks ending April 17th	39,000	42	14	13.9	8	4	..	1	..	....	....	....	....	..	1
Dist. of Columbia.—4 weeks ending April 17th	160,000	307	127	23.5	64	5	2	3	..	3	....	..	2	..	6
Dubuque.—4 weeks ending April 17th	30,000	17	1	7.3	6	1	..	1	1	2	....	....	....	..	..
Erie.—4 weeks ending April 17th	30,000	55	24	27.7	8	6	2	....	..	1	....	....	....	..	..
Evansville.—4 weeks ending April 17th	37,500	42	17	13.6	6	1	2	2	1	3	....	....	....	..	..
Fall River.—1 week ending April 17th	48,500	32	10	34.4	4	....	....	....	....	....	....	....	....	....	..
Hudson Co., N. J.—4 weeks ending April 17th	199,000	297	122	18.9	36	22	3	2	8	12	..	2	5	..	..
Indianapolis.—4 weeks ending April 17th	97,000	136	54	17.7	14	6	..	7	2	7	..	5	5	..	5
Lawrence.—4 weeks ending April 17th	40,000	52	18	16.9	16	....	1	1	..	1	..	1	....	..	..
Louisville.—1 week ending April 17th	175,000	239	111	18.3	30	10	1	5	3	1	..	....	....	..	..
Lowell.—4 weeks ending April 17th	52,000	107	42	25.7	16	3	....	....	....	....	....	4	1	....	..
Milwaukee.—4 weeks ending April 17th	124,000	166	68	17.	16	18	..	2	1	6	..	1	2	..	..
Mobile.—4 weeks ending April 17th	40,000	36	5	11.7	4	4	1	....	1	....	....	....	....	....	..
Newark—1 week ending April 10th	125,000	58	23	24.2	4	4	..	1	..	1	....	....	....	....	..
New Haven.—4 weeks ending April 17th	60,000	114	34	24.7	15	3	2	....	1	2	..	5	4	..	3
New Orleans.—4 weeks ending April 17th	210,000	435	152	27.	69	2	11	6	23	5	..	10	3	..	9
New York.—4 weeks ending April 17th	1,097,563	2,250	905	26.4	376	135	42	21	36	26	..	56	42	..	19
Omaha.—4 weeks ending April 17th	30,000	27	11	11.7	3	1	....	....	1	....	....	1	1	....	..
Philadelphia.—4 weeks ending April 17th	901,380	1,399	534	20.2	219	53	19	27	1	10	..	31	4	5	5
Pittsburg.—4 weeks ending April 17th	145,000	333	147	28.9	38	13	5	24	..	7	..	15	1	..	17
Providence.—4 weeks ending April 17th	101,500	172	49	21.9	15	20	1	....	..	25	....	....	1	....	..
Peoria.—4 weeks ending April 17th	40,000	37	8	14.5	7	21	....	....	..	2	....	....	1	....	..
Quincy.—4 weeks ending April 17th	35,000	40	12	14.8	3	....	....	....	....	....	....	....	....	....	..
Reading.—2 weeks ending April 3d	40,109	23	12	14.8	3	....	....	....	....	....	....	....	....	....	..
Richmond.—4 weeks ending April 17th	80,000	104	41	16.9	21	1	2	1	....	....	....	....	1	..	1
Rochester.—2 weeks ending April 17th	90,000	74	15	21.4	5	4	....	....	....	....	....	....	1	....	..
San Francisco.—3 weeks ending April 10th	300,000	291	90	16.5	40	7	4	6	2	1	..	4	7	..	5
Savannah.—1 week ending April 17th	32,656	17	6	23.7	1	....	1	....	....	....	....	....	1	....	..
St. Louis.—4 weeks ending April 17th	500,000	540	232	14.	63	11	10	5	13	5	..	13	2	..	2
St. Paul.—4 weeks ending April 17th	51,080	32	8	8.1	5	1	....	....	....	1	....	....	1	....	..
Utica.—4 weeks ending April 17th	35,000	43	10	16.	7	....	....	1	1	....	....	....	....	....	..
Wheeling.—4 weeks ending April 17th	35,000	87	53	38.4	2	2	2	11	..	....	....	22	1	..	1
Wilmington.—4 weeks ending April 17th	44,013	76	21	22.9	16	4	....	....	..	3	..	2	1	..	..
Mortality in Foreign Cities.															
Antwerp.—1 week ending April 3d	169,981	98	....	30.1	....	....	..	2	..	....	....	....	....	17	..
Buda, Pesth.—1 week ending March 27th	309,705	249	....	40.4	....	....	..	5	..	....	....	....	....	5	..
Bucharest	211,383	....	....	....	....	....	....	....	....	....	....	....	....	....	..
Bremen	105,000	....	....	....	....	....	....	....	....	....	....	....	....	....	..
Brussels—1 week ending April 5th	399,482	180	....	23.7	....	....	..	1	..	....	....	....	....	2	..
Belfast.—1 week ending April 10th	212,000	116	....	26.3	....	....	..	2	..	....	....	....	....	....	..
Berlin.—1 week ending March 27th	1,062,500	570	....	27.3	....	....	..	4	..	....	....	....	....	....	..
Christiania	113,000	....	....	....	....	....	....	....	....	....	....	....	....	....	..
Dresden	215,440	....	....	....	....	....	....	....	....	....	....	....	....	....	..
Frankfort.—1 week ending April 3d	120,000	65	....	26.9	....	....	..	....	..	....	....	....	....	....	..
Glasgow	578,156	....	....	....	....	....	....	....	....	....	....	....	....	....	..
Havana	195,437	....	....	....	....	....	....	....	....	....	....	....	....	....	..
Leghorn.—1 week ending April 10th	97,410	48	....	25.6	....	....	..	1	..	....	....	....	....	....	..
Leipsic—1 week ending April 10th	145,719	85	....	27.7	....	....	..	....	..	....	....	....	....	....	..
Lyons.—1 week ending April 3d	342,815	201	....	31.9	....	....	..	5	..	....	....	....	....	8	..
London.—1 week ending April 3d	3,620,868	1,732	....	24.7	....	....	..	7	..	....	....	....	....	9	..
Leith.—1 week ending April 10th	538,338	30	....	27.1	....	....	..	....	..	....	....	....	....	....	..
Montreal	135,000	....	....	....	....	....	....	....	....	....	....	....	....	....	..
Paris.—1 week ending April 1st	1,988,806	1,198	....	31.4	....	....	..	57	..	....	....	....	....	45	..
Rouen.—1 week ending April 10th	104,902	76	....	37.8	....	....	..	....	..	....	....	....	....	....	..
Stockholm.—1 week ending March 27th	169,429	83	....	26.8	....	....	..	....	..	....	....	....	....	....	..
Trieste.—1 week ending March 27th	127,873	107	....	40.7	....	....	..	....	..	....	....	....	....	1	..
Warsaw.—1 week ending March 27th	336,703	190	....	29.6	....	....	..	....	..	....	....	....	....	1	..

Editor's Table.

The Report of the Havana Commission, under the auspices of the National Board of Health, singularly verifies the conditions common to yellow fever everywhere—only that the conditions seem to exist in Cuba, and particularly in and about Havana, to an extraordinary degree. Hence the Commission concludes that there, at least, it is endemic; but that it only became so in 1761, notwithstanding that "before this time the geography, geology and meteorology of Havana were what they continue to be." . . .

"Historical records justify the suspicion that yellow fever prevailed in San Domingo in 1493–1494 and subsequent years, in Porto Rico as early as 1508, in Darien in 1514, in Guadaloupe in 1635, etc. Knowledge of nature's laws, of disease, of yellow fever particularly, and of other subjects relating to the present topic, convert the suspicion justified by scanty historical records into an absolute conviction that yellow fever was at least coeval in some of the West Indies with their first settlement by Europeans."

"History records that 'previous to 1762 Cuba had no commerce, the country lived by smuggling,' and that 'in 1818 the port of Havana, in common with the others of the island, was by law opened to foreign commerce.'"

Hence the conclusion appears to be, although not in so many words stated, that, admitting the existence of local and meteorological conditions previous to 1761, the only other conditions necessary to the endemicity of yellow fever in Havana were commerce and population—it may be a *commercial* population. Not, however, of a kind to admit that the disease first occurred on board ship, and was thence introduced; this proposition is expressly disproved by accepted evidence. But that which arises from the unremoved accumulation of filthy ballast and débris from a multitude of vessels "in a climate which favors to the utmost decomposition, putrefaction and the propagation of vegetable and animal life;" with adjacent swamps and a soil saturated with filth as the drainage bed of the water supply; streets adown which the sun never shines, miry with filth, and yet the perpetual catch-alls of the sweepings of living floors on the same level; back yards, with the kitchens, privies, store-rooms for food, and stables in close proximity, and over these, not unfrequently, the sleeping apartments. In short, the Commission well observes, not only of Havana, but

"Wherever in Cuba a town exists which has the greatest commercial intercourse, the most numerous unacclimated population, the

least exposure to the winds, and houses the most crowded together, densely inhabited and filthy, the worst ventilated and drained, there a town will be found wherein the endemic prevalence of yellow fever is most marked."

Or, as we have often heretofore had occasion to remark, filthy soil, foul water, foul vessels, foul traffic, moisture and high temperature are the common conditions of yellow fever everywhere.

The one and apparently only new thing observed in relation to yellow fever by the Commission was that—

"Upon the glass slips exposed in Havana in the yellow fever wards of hospitals, in the laboratory of the Commission, and on infected vessels, the dust deposited was found to contain a variety of vegetable organisms, and numerous extremely minute crystals, in addition to the amorphous mineral and vegetable matters, epithelial cells, etc., which make up the greater part of the dust found everywhere. . . . certain slender glistening acicular crystals radiating from little opaque masses, which were especially abundant in the yellow fever wards and in the soiled-linen room of the military hospital. Subsequent observations in the United States have added to the interest which these striking objects aroused when first seen. Soon after the return of the Commission the National Board of Health had a session in Washington, and several of the members on returning to their homes took with them some watch-glasses arranged in little boxes, so that they could be conveniently packed and sent by mail. These watch-glasses were exposed in various places, and returned to Washington for microscopic examination of the dust deposited upon them. They were received in good order, and had adhering to the concave surface of each glass a deposit of dust more or less abundant, according to the place of exposure. Seven boxes, each containing two glasses, were received from infected localities, viz., two from Morgan City, Louisiana, four from Centreville, Louisiana, and one from Bayou Bœuf.

"Of these, six pairs of glasses had been exposed in the rooms occupied by yellow fever patients, and one pair outdoors, in an infected locality. All of these glasses were found to have adhering to them a considerable number of radiating acicular crystals, exactly similar in appearance to those discovered in Havana. Eight boxes were also received from places supposed to be not infected, viz., four from Bellevue Hospital, New York, and four from Charity Hospital, New Orleans. The watch-glasses enclosed in these boxes had been exposed in the wards of these hospitals, and in the dead-house and soiled-linen room of Charity Hospital. All were covered with a deposit of dust, and none of those from New York presented any appearance of crystals. The glasses from New Orleans, however, had a very few of the acicular crystals described and a considerable number of prismatic crystals, exactly resembling crystals found in Havana upon glass slips exposed in the laboratory and in the Military Hospital. Whether these and the prismatic crystals are different substances or different forms of the same substance, whether they, one or both, bear a casual relation to yellow fever, whether they are present in the

atmosphere in greater abundance during the prevalence of yellow fever without being the true poison of the disease, or whether they are entirely independent of this disease, are questions to be determined by future investigations."

Nevertheless, we consider the work of the Commission eminently successful, as well as needful. It is to us conclusive as to the natural history of yellow fever. It has verified conclusions which we have long entertained, based upon a somewhat extensive observation. And we hope for the report a practical application, not only for the destruction and prevention of yellow fever in the United States, but as well for Havana, and Cuba throughout, by the most rigid exactions of both internal and external hygiene, thorough civic cleanliness and enlightened quarantine restrictions.

Higgins' "German Laundry Soap."—In answer to numerous inquiries and to the general interest recently awakened on the importance of pure soaps, we are enabled to state, in advance of the completion of an analysis now in process, which promises to be ready for next number, that Higgins' "German Laundry Soap" stands pretty much in the same relation to other laundry soaps as did the old German hard soap of a century ago—it was deemed the best in the world.

Notwithstanding, this German art of soap making, which for a long period of time greatly excelled, was wholly empirical, without the application of any chemical knowledge whatever. The makers wholly depended upon observation, adding more ley or more fat according to appearances in the process until the desired state was attained. The soap was consequently very imperfect, prepared from crude tallow by ley of ashes or potashes, converted into "curd" or neutral soap by the addition of common salt and subsequent boiling. And this process is that which is unfortunately still followed in many households throughout the country, and by some factories, using the drippings of the kitchen and all sorts of scrap-fat, with crude potash, for soft soap, and adding common salt to make hard soap. Such compounds are, in truth, unworthy the name of soap. They contain all the glycerine of the fats used, and frequently a large proportion of unaltered, impure and unsaponified fatty matter. The resultant "soap" from such material, therefore, becomes a means of distributing dangerous filth.

As a technical art, soap-making consists in the use of well-adjusted proportions of caustic leys of suitable strength to the complete saponification of all the fats, oils and resins in the compound with resultant soaps which are hard or soft, dependent upon the nature of the alkali, and the absence or presence of glycerine, this later sub-

stance never being present in good hard soap. Resin boiled with alkaline liquors, is converted into a soapy emulsion, which alone, although not a true soap, when perfectly pure and added in the right proportion, greatly adds to the good qualities of soap, increasing its emulsive qualities and modifying the effect of the alkali on the skin and clothing. And such is the composition of the particular variety of soap under consideration: a compound of perfectly pure tallow, resin, soda ley and water, in such proportions (the actual per cents. will be furnished hereafter) as to form a perfect soap, free from all extraneous matter, non-irritative to the skin and non-corrosive to any textures.

The Perils of the Ship, as judged by some recent occurrences, stand in pretty much the same relation to the hopes of emigrants to America as do the public school buildings throughout the country to education. Both are fraught with terrible risks to life; both are constructed with more regard to the conveniences of packing the largest number in the smallest space than to any care of individuals in regard to health. The chief difference is that in the ship the constant restraint day and night, for a week or so, seals the evidence by death, in numerous cases, in the face of the perpetrator's agents; while in the school the subjects usually go home to die. In both there are long lines of descent, and for every death, traceable by immediate relations to the overcrowded ship or school, there are, doubtless, ten or more whose fate is no less certainly sealed by the same relations, although protracted, it may be, by years of intermediate physical suffering. And finally, in both there is eminent necessity for state, national and international interference for the protection of human life.

Ocean Travel, for the outward bound, rarely or never presented greater attractions than at the present time. All Europe is at peace, and with all the world besides, insomuch that there are no barriers to the seekers of health or pleasure across, or on the other side of the ocean. Never before did ship afford such luxuries or promise such safety as the great lines advertised in THE SANITARIAN; and these—such of them as bring emigrants on their return trips—we are assured undergo thorough purification at the end of every voyage. As for the rest, such ships as suffer overcrowding in steerage or cabin, and do not practice the most scrupulous cleanliness, no matter what the strength of the material or the skill of navigation, health and life on board are in constant jeopardy. Such ships are liable to outbursts of the most appalling epidemics—meanwhile they are perpetual sources of ill-health to all who travel in them.

The American Medical Associaton—Arrangements.

The Association will meet June 1st, and the general sessions will be held in the hall of the YOUNG MEN'S CHRISTIAN ASSOCIATION, corner of 23d Street and 4th Avenue.

The Sections on Practice of Medicine, Obstetrics, Diseases of Children, Ophthalmology and Laryngology, will meet in the same building as the general sessions. On Surgery and Anatomy, and State Medicine, in the College of Physicians and Surgeons—the former in the amphitheatre, and the latter in the lower lecture room.

ENTERTAINMENTS—arranged for at the time of this writing: RECEPTION at Academy of Music; GRAND CONCERT or Theatrical Entertainment; SEVERAL RECEPTIONS by distinguished Citizens, and Members of the Medical Profession; STEAMBOAT EXCURSION up the North and East Rivers, and down the harbor to the Quarantine Establishment.

COMMITTEE OF ARRANGEMENTS.

T. G. Thomas, Chairman.
Stephen Smith.
Jos. C Hutchison, Brooklyn.
Robt. Weir.
W. M. Polk.
E. H. Parker, Poughkeepsie.
Chas. Inslee Pardee.
M. H. Burton, Troy.
A. A. Smith.
Montrose A. Pallen.
Walter Gillette, *ex-officio*, Secretary.

ALL BUSINESS communications should be sent to

M. A. PALLEN, *Chairman of Business Committee*,
18 E. 29th St., New York.

State Board of Health for New York.—At the latest moment of our "make up" we are gratified with intelligence from Albany, that the bill creating a State Board of Health has passed the Legislature and only awaits the signature of the Governor to become a law.

Literature.

Ville de Bruxelles.—*Rapport fait au Conseil Communal, en Séance du 6 Octobre*, 1879, *par Le Collége des Bourgmestre et Echevins*, 1879, furnishes some very interesting details not in the Annuaire of the *Inspecteur du Service de Santé*, thus: The increase of population for the year 1878 was 1,518 persons; of the marriages celebrated, 1,271 were between bachelors and maidens; 83 between bachelors and widows; 157 between widowers and maidens, and 63 between widowers and widows; total, 1,554.

During the period from 1868 to 1878, both included, the greatest

number of births, 6,045, was in 1872, of which number 1,688 were illegitimate, and 4,357 legitimate; or 38 illegitimate to 100 legitimate, and each being respectively 28 and 72 per cent. of the whole number of births; and this proportion remains nearly the same through the other years. The smallest number of births, 5,501, occurred in 1878. The greatest number of marriages, 1,968, was celebrated in 1872; and the greatest number of divorces, 34, was granted in 1878, the smallest, 15, in 1871.

The average for the ten years, preceding 1878, was:

1 birth for every 29.24 inhabitants.
1 illegitimate birth for every 113.37 inhabitants.
1 death ,, ,, 34.16 ,,
1 marriage ,, ,, 95.61 ,,
1 divorce ,, ,, 71.79 marriages.

The details connected with this subject should engage the attention of every one interested in the subject of vital statistics and sociology in this country.

The total number of animals slaughtered at the abattoir during 1878 was 130,996, of which there were 27,228 pigs, 3,325 lambs, 53,092 sheep, 24,156 calves, and the rest principally beeves. The fish sold, during the same period, was valued at 1,514,618 francs, or somewhat more than 300,000 dollars.

From the report of the Police Department the following summary is taken: Arrests for counterfeiting, 31; forging signatures, 57; resisting officials, 403; homeless and begging, 2,577; assassinations (and attempts), 5; murders, 2; infanticides, 8; blows and wounds inflicted, 1,127; burglaries, 35; larceny, 1,798; breaches of trust, 396; and various other crimes, which gave a total of 7,695 for the year.

The number of insane placed under restraint was, in 1876, 80; in 1877, 96; and in 1878, 116. Of this number 7 were under 20 years of age, and all unmarried females; between 20 and 25 years there were 14, 8 males and 4 females unmarried, and one male and one female married; from 25 to 30 years 19, 11 males and 7 females unmarried, and one male married; from 30 to 35 years the whole number was 11; from 35 to 40 years 19, of which 14 were males—5 unmarried, 8 married, and 1 widower—of the females 4 were unmarried and 1 married. During the next quintennial there were 14, and during the succeding one 13; then 8, and next 3, and finally over 60 years there were 8, of which one male and one female unmarried, 1 male and 1 female married, 2 widowers and 2 widows; total, 116.

Great care has been bestowed on the *re-vaccination* of children attending the primary schools—practiced on all who have attained

their tenth year. The number re-vaccinated was 671; the result was, perfect pustule 117, imperfect 251, unsuccessful 294, unknown 69; perfect pustules 17 per cent., imperfect 37 per cent. Result, more or less perfect 54 per cent.; negative or unknown 46 per cent.

The sanitary inspection of schools has been a subject of increasing importance for several years, and is now entrusted to the care of eight physicians, who are required to make three inspections of every school monthly. Important changes have been made in many of the schools, and many others will soon be perfected. Instructions are given in the higher classes during these inspections. The subjects treated have been the proper lighting, heating and ventilation of buildings; the hygiene of respiration; the proper care to be given in case of accidents; vaccination and the prevention of contagious diseases. All institutions of learning are now subject to regular hygienic surveillance.

Since 1875, great efforts have been made to organize a system of preventive medicine. "The initiative taken by the city of Bruxelles, in organizing a system of preventive medicine for weak and sickly children who attend the schools, seems to be extending to other places. The city of Louvain has established a similar system in her schools, in accordance with plans furnished by our Board of Health; and many other places, both in this and foreign countries, have asked for instructions in this matter." The results thus far obtained are summarized as follows:

Treated, 697 boys, 421 girls; cured, 79 boys, 61 girls; improved, 318 boys, 203 girls; no result, 106 boys, 59 girls; unknown, 134 boys, 98 girls; cured, boys 11.4 per cent., girls 14.4 per cent.; improved, boys 46 per cent., girls 48.2 per cent.; no result, boys 24 per cent., girls 13.5 per cent.; unknown, boys 19.4 per cent., girls 23.3 per cent.

It is said that the large proportion of results given as unknown depends on the numerous changes made in the abode of scholars during the year; but measures will soon be completed for obviating this difficulty.

Dental hygiene, another subject entirely new, continues to afford the most satisfactory results. Every child attending the schools has been examined by a *specialist* appointed for that purpose. The following cases have been treated:

Periodontitis, 428; supernumerary teeth or maxillary bones too small, 377; odontalgia (toothache), 209; gingivitis, 81; advice as to care of teeth, 112; total, 1,207.

Another interesting feature in connection with these schools is the establishment of a savings bank, in which the children are induced deposit money they do not wish to spend.

Annuaire de la Mortalité on Tableaux Statistiques des Causes de Décès et du Mouvement de la Population, par le Docteur E. Janssens, Inspecteur du Service de Santé de la Ville de Bruxelles, etc., etc.; avec plans et diagrammes en Chromolithographic, 1878, 17e année, 1879.

After Switzerland, Belgium took the lead in introducing various measures of sanitary reform, and the Statistical Reports for the City of Brussels serve as models for many local Boards, and are received as authority everywhere. This report gives the following interesting résumé :

On the 1st of January, 1878, the population was estimated at 175,782, of which number 88,861 were males, and 86,921 were females. The city covers an area of 896 *hectares*, 71 *acres*, 50 *centiares*; about 3½ square miles, or nearly 2,220 acres.*

During the year 5,740 births were reported, classified as follows :

Males, legitimate,	2,211,	illegitimate, 714.	Total, 2,925.
Females, "	2,137,	" 678.	" 2,815.
Total,	4,348.	1,392.	5,740.

In this number are included 141 twins, of which number 73 were males and 68 females; of these, 113 were legitimate and 28 illegitimate.

There were celebrated 1,554 marriages, and 35 divorces were granted.

The number of deaths were : males, 2,679, females, 2,267 ; total, 4,948.

Still-born, not included in the number of deaths, males, 213, females, 149 ; total, 362.

As compared with the ten years, from 1864 to 1875, the number of deaths was 762 less than the average for that period.

The births were 792 in excess of the deaths. The average of births, daily, 15.7 ; of marriages, 4.3 ; of deaths, 13.6 ; of still-born, 0.9.

Died in their homes, 3,171 ; in the hospitals, residents, 901 ; non-residents, 876 ; total, 1,777.

Of the deaths, 2,869 occurred among children and unmarried persons ; married, 1,268 ; divorced, 6 ; widowers and widows, 805.

There were 4,072 deaths among the resident population. Average rate per 1,000 inhabitants, 23.1.

There were no homicides.

There were 39 suicides, of which number 37 were males and 2 females.

There were 130 accidents ; 111 among males and 19 among females.

* This gives nearly 80 inhabitants to the square acre.

Phthisis caused the largest number of deaths, 858; Bronchitis and Pneumonia, 747; Tubercular Meningitis, 194. Total, 1,799.*

Diseases of the digestive organs caused 668 deaths, and organic disease of the heart the large number of 364, while cerebral apoplexy and softening of the brain, 308; these two diseases thus caused 672 deaths, or 13.6 per cent. of the whole, being more than *one* (1) in seven and a half ($7\frac{1}{2}$).

Other remarkable causes of death are, senile debility, 161; congenital debility, 102; cancers, 85; scirrus and ulcers of the stomach, 57.

The details in this report will be found of great interest to the student of vital statistics, and will furnish many useful suggestions and models for imitation for those engaged in the preparation of similar reports. T. P. C.

Bureau of Education.—Circulars of Information, 1879: 1. Training Schools for Nurses. 2. Papers, Addresses, Discussions, etc., of the Department of Superintendence of the National Education Association, the meeting February 4–6, 1877, and the Proceedings of the Conference of the Presidents and other Delegates of the State Universities and Colleges of Ohio for 1877. 3. The Value of Common School Education to Common Labor, by Dr. Edward Jarvis, of Dorchester, Mass., together with illustrations of the same, as shown by the answers to inquiries, etc. 4. Training Schools of Cookery. 5. American Education, as described by the French Commission to the International Exhibition of 1876, and No. 1, 1880, on College Libraries as Aids to Instruction. No abstract or mere notice of these circulars, to which our space is limited, would adequately represent their importance; they should be read entire. And it is to be supposed, at least it should be so, that they are issued in such numbers as to enable the Bureau to send copies to all interested applicants. Washington: Government Print. John Eaton, Commissioner of Education.

"**Sewers and Drains for Populous Districts,**" † besides being the best summary of the general subject of which it treats hitherto published in this country, gives a lucid description of one of the best illustrations of a bad system of sewerage we know of—the sewerage of Brooklyn, and the system of large sewers intended for the double purpose of carrying all storm and surface waters, as well as sewage.

* Nearly 38.4 per cent. of the whole number of deaths.

† With Rules and Formulæ for the Determination of their Dimensions under all circumstances. By Julius W. Adams, Chief Engineer to the Board of City Works, and Consulting Engineer to the Board of Health, Brooklyn. 8vo., pp. 228. Illustrated. New York: D. Van Nostrand.

At the date on which the special sewer works were undertaken, in 1857, the author states "we were totally without data of any kind in this country, to guide in the determination of the proper dimensions of sewers for the drainage of cities and towns. The only principle recognized was to make them large enough to admit the entrance of workmen to clean them, by the use of the pick and shovel." But the author had before him the first Report of the Metropolitan Sanitary Commission, London, 1847, the first report to the British Parliament under the Public Health Act, 1852, a table of the rainfall over the Brooklyn area for seven years preceding; and he comprehended all the relations of soil, surface and outfall. And it may be safely said of the sewerage system of Brooklyn, it is at least equal in efficiency to any of its kind; but it is essentially defective and dangerous to the public health, and not by any means wholly due, as the author states, to: "The only defect in the system of sewerage in the city of Brooklyn grows out of the mistaken effort to drain below the tide-level, and the consequent sealing of the outlets of some of the sewers by the high tides which usually accompany severe storms." This is indeed a grave defect, but less than that of the mistaken effort primarily to adapt the size of the sewer to an *average* rainfall, and therefore necessarily too small for large rainfalls, and always too large and consequently unflushed and foul-gas wreaking in time of drought; to construction out of brick and other porous material, and to no provision whatever for soil drainage. But besides these defects, the system itself is dangerous and indefensible on sanitary grounds, whatever may be the degree of engineering skill in its construction.

Although the author seems, in vindication of his own work, to oppose the double system of separate conduits for surface and soil water and sewerage, we are constrained to believe that with his evident knowledge of the etiology of filth diseases, his skill as an engineer and his practical knowledge of both the costs of construction and maintenance of a system which encounters such obstacles as "street refuse, sand, gravel, lime, building materials, and whatever incumbrances the streets of a city under a lax system of street-cleaning accumulate . . . swept into the sewers . . . under the penalty of a complete stoppage and consequent hazard to the public health"—in full comprehension of such results to his favorite system—he would not find, as he alleges, that the double system, which involves no such obstacles, implies increased expense, but the contrary.

House drainage is briefly discussed and well illustrated by the best mechanical contrivances for the prevention of foul emanations, and ventilation.

Appended are four papers of special practical value: (a) Main

Drainage of London, with an illustrative map, from a paper to the Institution of Civil Engineers, by the Constructing Engineer, Sir Joseph Bazelgette; (b) Specifications and Estimates for the Use of Bidders and Builders of Sewers; (c) Description of Clays used by the Akron Sewer-Pipe Company, Akron, Ohio; and (d) Description of Clays used, and the method pursued in the Manufacture of Sewer-Pipe in the Neighborhood of New York, by G. W. Roder & Co.

The Marine Hospital Service of the United States, by Report of Supervising Surgeon-General, 1878 and 1879, pp. 176, shows for fiscal year ending June 30, 1878, 18,223, and to the same period 1879, 20,922 seamen were furnished relief, being an excess of 4,114 over any year previous to 1878. Of the number treated in 1879, 11,499 were treated as hospital patients, and the remainder—9,423—as dispensary or "outdoor patients." The statistical tables are very diffuse—occupy more than half the volume—and do not admit of a statement of the relative prevalence of the diseases treated without more labor in adding up figures than we have time to bestow upon such work. "It is not known," the Surgeon-General remarks, "how large a number of sailors are actually unseaworthy; but it is known that at least forty per cent. of all seamen are affected with venereal diseases. This is especially true of those employed in the cook's and steward's departments of the passenger steamboats." In summing up this disease only, as reported in the tables for 1879 (if we understand it), 2,335 cases—or *more than one-ninth of the whole* 20,922 cases of diseases treated among the seamen of that year were venereal! Of the special reports, Surgeon J. B. Hamilton (now Surgeon-General) gives twenty years' consolidated sick reports of the Marine Hospital, at Chelsea, Mass., ending June 30th, 1878. Of 14,419 total sick, 2,746, or about *one-sixth* were venereal. Surely nothing could be more emphatically suggestive of the importance of instituting some measure for the prevention of venereal diseases than these figures. Dr. Hamilton remarks: "The physical examination of seamen and a local registration of abandoned women on shore, would do for syphilis what the enforced introduction of lime juice has done for scurvy, practically eliminate it from the list of diseases to which sailors are liable."

Other special reports are: Yellow Fever at Gallipolis, O., 1878—Surgeon W. H. Long; Yellow Fever at St. Louis, Mo., 1879—Surgeon Walter Wyman; Yellow Fever at Cairo, Ill., 1878—Assistant-Surgeons R. Waldo, J. H. O'Reilly and H. M. Keyer; Cruise of U. S. Revenue Steamer *Rush*, in Alaska Waters—Assistant-Surgeon Robert White. This last is a particularly interesting report of the mode of life, the physical and moral condition of the Indians and whites inhabiting Alaska, with observations on the climate and physical geography of

the country. The morals of the people are low in the extreme—drunkenness, prostitution, syphilis, small-pox, scrofula, and rheumatic affections prevail.

The cost of the Marine Hospital Service for the period reported upon, was for 1878, *per capita*, $21.04, 1879, $17.93—a continuous reduction since 1870, when the cost was $38.41. Total expenditures for 1879, $375,164.01; receipts, $361,409.58.

Baltimore—The Annual Report of the Health Department for 1879, James A. Stewart, Commissioner of Health and Registrar, shows a record (exclusive of 621 still-births) of 7,618 deaths, 2,066 of which were of infants under one year old; under five, 3,385. The chief causes were: Consumption, 1,162; pneumonia, 509; cholera infantum, 475; scarlet fever, 367; diphtheria, 298; heart diseases, 252; typhoid fever, 166; whooping cough, 80; measles, 43. Estimating the population at 393,796—19.30 per 1,000—being a little less than 1 per 1,000 over last year (18.44 per 1,000). The general sanitary condition of the city is pronounced to have been satisfactory. Yet of 71 samples of pump and spring drinking-water, examined by Professor W. P. Tousy, there were: West of Jones' Falls, 23 filthy, 5 bad, 7 suspicious, and 1 good; in the eastern part of the city: 10 filthy, 5 bad, 15 suspicious, and 5 good. The 23 worst samples from the West and the ten worst from East Baltimore show such large amounts of ammonia as to point unmistakably to direct and close contact with privy refuse; 11 of them from West and 4 from East Baltimore contain more free ammonia than a mixture of distilled water and urine, one tenth of which was urine.

E. Lloyd Howard, the Maine Hospital physician, reports increasing embarassments and dangers of the quarantine section by reason of the nearness to the extending city, and reiterates his long entertained opinion that the efficacy of quarantine would be greatly promoted if the quarantines of the entire Atlantic coast were in charge of the General Government.

New Jersey State Board of Health.—Third Annual Report, 1879, pp. 230, reports increased activity for the year, and a growing interest in the objects of the Board throughout the State. Drainage, sewerage and water supply have received the chief attention of the Board collectively, besides which E. A. Osborn, C.E., furnishes a special paper on *House Drainage and Sewerage*, illustrated by a diagram of an apparatus exhibit, by E. Dunn & Bro., at the Annual Fair of the State Agricultural Society, at Waverley, in September last. Other special papers are: *Drowning*, by T. G. Chattle, M.D.; *Adulteration of Food*, Prof. A. R. Leeds, Ph.D.; *Disinfection*, E. M. Hunt, M.D.; *Meteorology as an Aid to the Physician*, Prof. C. F. Brockett, Ph.D.;

Undertakers as Guardians of Public Health, E. M. Hunt, M.D.; and *Sanitary Legislation*, E. S. Atwater, Att'y.

The Secretary, Dr. E. M. Hunt, summarizes the work of the Board for the year and reports progress in a sanitary inspection of the shore line and adjoining districts of the State, aided by the National Board of Health. The Secretary being also Superintendent of Vital Statistics, reports, population (1875) 1,020,584. Deaths registered (exclusive of still-births), 20,440—20.02 per 1,000. 7,919 were under five years of age. 1,100 died of diphtheria and croup; 627, scarlet fever; 324, typhoid fever; 1,849, diarrhœal diseases; 2,788, consumption; and 2,160 acute lung diseases. Of the total, nearly one-fourth were caused by zymotic diseases, and over one-seventh by consumption. Births recorded, 23,116; marriages, 7,096.

It is proposed by the Board to have an annual exhibition of sanitary appliances, under the auspices of the State Fair, which opens about the middle of September. Articles are invited, directed: "New Jersey State Fair, Waverley, care of N. J. State Board of Health."

Nervous Exhaustion, or Neurosthenia,* is a new work on a new subject, and, consequently, consists for the most part of the author's own observations, and is proportionally lacking in arrangement and condensation, which comes of abundant extraneous resources. The author, being the chief contributor to his theme, has labored under the disadvantage of being obliged to keep himself in the foreground whether he would or not; hence his work partakes more of the character of an essay, or rather a succession of essays (for it is a compilation of a number of his own essays under various titles, contributed to periodical medical literature, covering a period of ten years or more) than of a systematic treatise. Nevertheless, it is a substantial contribution to practical medicine, and especially to the hygienic treatment of many ambiguous—and consequently badly treated—complaints falling under the observation of all practitioners.

Vegetarianism the Radical Cure for Intemperance † is a valuable contribution to the treatment of intemperance not only, but to dietetics, giving a summary of vegetable foods and their nutritive values, useful to all physicians and nurses. The author is already favorably known to the readers of THE SANITARIAN by her

* A practical treatise on Nervous Exhaustion (Neurosthenia), its symptoms, nature, sequences, treatment, by George M. Beard, A.M., M.D., Fellow of the New York Academy of Medicine, of the New York Academy of Sciences; Vice-President of the American Academy of Medicine; Member of the American Neurological Association; of the American Medical Association; New York Neurological Society, etc. 8vo., pp. XX. and 198. New York: William Wood & Co.

† By Harriet P. Fowler. Pamphlet, pp. 79. New York: M. L. Holbrook & Co.

excellent paper on *Faulty Menu of Boarding Schools.* Her book is of the same excellent character, and it affords us much pleasure to commend it.

"**The Juvenile Temperance Reciter**" is a neat twelvemo. pamphlet of sixty-four pages, containing as many well-chosen selections in prose and verse, adapted and calculated to amuse and instruct children. Price, 10 cents. J. N. Stearns, 58 Reade Street, New York.

The Hair* is, of all parts of the human body, the most abused in its relations to healthfulness and growth. Pulled, twisted, torn, burned into a friz, and besmeared by all sorts of unguents and lotions, it is a wonder that baldness is not really the rule instead of the exception among those who most prize its beauty—the female sex. And it is equally neglected, if not indeed abused, by most physicians, many of whom, while heartily condemning the thousand and one preparations well known to be not only injurious to the hair, but dangerous to the general health, show their total neglect of this part of their cure by relinquishing it to barbers and quacks. The treatise before us admirably fills a long-tolerated gap in the literature of the subject, which should not only be welcome to all physicians for whom it is a scientific treatise, while for the general reader it is also an entertaining work on the manners and customs of dressing the hair by all nations in all ages.

Morphia Hypodermically † is a work of much practical utility to all physicians. Besides giving an interesting sketch of this potent means of relieving suffering, it comprehends the discrimination necessary to its most intelligent use, and the dangers of its abuse; insomuch as to be well nigh indispensable to all medical practitioners.

Hydrate of Chloral.—Dr. H. H. Kane requests physicians to answer the following questions as fully as possible:

1. What is your usual commencing dose?

2. What is the largest amount you have administered at one dose, and the largest amount in twenty-four hours?

3. In what diseases have you used it (by the mouth, rectum, or hypodermatically), and with what results?

---

* "The Hair, its Growth, Care, Diseases and Treatment." By C. Henri Leonard, M.A., M.D., Professor of Medical and Surgical Diseases of Women and Clinical Gynecology in the Michigan College of Medicine; Member of the American Medical Association, of the Wayne County Medical Society, etc. Illustrated by 116 engravings, 12mo., pp. 316. Detroit, Michigan: C. Henri Leonard.

† The Hypodermic Injection of Morphia. Its history, advantages and dangers. By H. H. Kane, M.D. 12mo., pp. 354. New York: Charles L. Bermingham & Co.

4. Have you known it to affect the sight?

5. Have you ever seen cutaneous eruptions produced by it?

6. Have you known it to affect the sexual organs? If so, how?

7. Do you know of any instances where death resulted from or was attributed to its use? If so, please give full particulars as to disease for which given; condition of pulse, pupils, respiration and *temperature;* manner of death; condition of heart, lungs and kidneys; general condition, age, temperament, employment, etc., etc., etc. If an autopsy was held, please state the condition there found.

8. Have you seen any peculiar manifestations from chloral—as tetanus, convulsions, or delirium?

9. Do you know of any cases of the chloral-habit? If so, please state the amount used, the disease for which the drug was originally administered, the person's temperament, the present condition of the patient with reference to the state of the body and mind in general, and the various organs and systems in particular.

All communications will be considered strictly confidential, the writer's name not being used when a request to that effect is made. Address all letters to Dr. H. H. Kane, 191 West Tenth Street, New York.

Our Public Schools, in Their Relation to the Health of Pupils. By J. T. Reeves, M.D., and

Our School Houses, by Prof. T. W. Chittenden, are two excellent reprint pamphlets, from the Fourth Annual Report of the State Board of Health, of Wisconsin, well calculated to do good service wherever read, and eminently worthy of the widest dissemination possible. Appleton, Wis.; David Atwood, State Printer.

Publications Received.—Of Wood's Library of Standard Medical Authors for 1880: Poulet's Foreign Bodies in Surgery, Vols. II., Guttman's Handbook of Physical Diagnosis, Wm. Wood & Company, New York; Packard's Sea-Air and Sea-Bathing—Health Primer—Presley Blakiston, Philadelphia; Report of Public Schools of Maryland, 1879; Health Officers' Report, D. C.; Rhode Island Registration Report, 1878; Dayton Board of Health Report, 1879; Klemm's Muscle-Beating, M. L. Holbrook & Co., New York; Massachusetts First Annual Report, Health, Lunacy and Charity; Cincinnati Health Department Report, 1879; Cleveland Health Department Report, 1879; Wisconsin State Board of Health Report, 1879; Memphis Board of Health Report, 1879; N. Y. Ophthalmic and Aural Institute Report, 1879; Minneapolis Sisterhood of Bethany Report, 1879; Earle's Cinchona Cure; Sevier's Toxemic Diseases; Van Bibber's Baltimore as a Medical Centre; Sternberg's Microscopical Investigations of Yellow Fever; Frankland's Water Analysis, Presley Blakiston, Philadelphia.

THE SANITARIAN.

A MONTHLY MAGAZINE.

Vol. VIII. JULY, 1880. No. 88.

STATE BOARD OF HEALTH OF NEW YORK.

AN ACT TO ESTABLISH A STATE BOARD OF HEALTH.

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

SECTION 1. Within twenty days after the passage of this Act, the Governor shall appoint, by and with the advice and consent of the Senate, three State Commissioners of Health, two of whom shall be graduates of legally constituted medical colleges, and of not less than seven years' practice of their profession. The said Commissioners, together with the Attorney-General, the Director of the State Survey, and the Health Officer of the Port of New York, who shall be ex-officio members of the State Board of Health, and three other persons to be designated and appointed by the Governor, one of whom shall be a Commissioner of Health of the Board of Health of the City of New York, and the others shall be Commissioners of Health of regularly constituted and organized Boards of Health of cities of the State, shall constitute the Board of Health of the State of New York. Nothing in chapter three hundred and thirty-five of Laws of the State of New York in the laws amending the same, or in the laws constituting Boards of Health in the various cities of the State, shall be read or construed to prevent the appointment of the said Commissioners of Board of Health of cities, also members of the Board of Health of the State of New York, and no appointment to an office, or acceptance thereof under this law, shall be held to vacate the office previously held in any Board of Health of any city in this State.

§ 2. The said three Commissioners so appointed shall take the oath of office prescribed by the Constitution for State officers, and receive from the Secretary of State certificates of their appointment. They shall hold office for three years, and, whenever a vacancy occurs the place shall be filled as in other cases provided by law, and the other Commissioners shall, from time to time, be designated by the Governor, as occasion may require, or as their places may be vacated in the Board by the expiration of their several terms of office.

§ 3. The State Board of Health shall meet at least once in every three months, and as much oftener as they shall deem necessary, their first meeting being held within two weeks after the appointment duly made of the members of the first Board and after they shall have qualified as aforesaid, and each annual meeting to be held within two weeks after the first of May each year after the first, as herein provided. No member of the Board, except the Secretary, shall receive any compensation, but the actual traveling and other expenses of the members and officers of said Board, while engaged in their duties, shall be allowed and paid out of the appropriation made for its support. They shall elect annually one member of the Board to be President; they shall also elect from among their own members or otherwise, a person of skill and experience in public health duties and sanitary science, to be the Secretary and executive officer of said Board, who shall have all the powers and privileges of a member of the Board, except in regard to voting upon matters relating to his own office and duties as Secretary, and he shall hold said office for the term of three years, but he may be removed for cause after a full hearing by the Board, a majority of the members voting therefor.

§ 4. The State Board of Health may adopt by-laws regulating the transaction of its business, and provide therein for the appointment of committees to whom it shall delegate authority and power for the work committed to them, and it may also adopt and use an official seal. Six members shall constitute a quorum for the transaction of business.

§ 5. The Secretary shall keep a record of the acts and proceedings of the Board, perform and superintend the work prescribed in this act, and such other duties as the Board may order, and shall receive an annual salary of three thousand dollars, which shall be paid him in the same manner as the salaries of other State officers are paid, and such necessary expenses shall be allowed him as the Comptroller shall audit on the presentation of an itemized account, having vouchers annexed, together with the certificate of the Board.

§ 6. Said Board shall take cognizance of the interests of health and life among the people of the State, they shall make inquiries in respect to the causes of disease, and especially of epidemics, and investigate the sources of mortality, and the effects of localities, employments and other conditions upon the public health. It shall be the duty of said Board to obtain, collect and preserve such information relating to deaths, diseases and health as may be useful in the discharge of its duties, and contribute to the promotion of the health or the security of life in the State of New York. And it shall be the duty of all health officers and Boards of Health in the State to communicate to said State Board of Health copies of all their reports and publications, also such sanitary information as may be useful.

§ 7. It shall be the duty of the State Board of Health to have the general supervision of the State system of registration of births, marriages and deaths. Said Board shall prepare the necessary methods and forms for obtaining and preserving such records, and to insure the faithful registration of the same in the several counties, and in the Central Bureau of Vital Statistics at the capitol of the State. The said Board of Health shall recommend such forms and amend-

ments of law as shall be deemed to be necessary for the thorough organization and efficiency of the registration of vital statistics throughout the State. The Secretary of said Board of Health shall be the Superintendent of Registration of Vital Statistics of the State. As supervised by the said Board, the clerical duties and safe keeping of the Bureau of Vital Statistics thus created shall be provided for by the Comptroller of the State, who shall also provide and furnish such apartments and stationery as said Board shall require in the discharge of its duties.

§ 8. At any time the Governor of the State may require the State Board of Health to examine into nuisances, or questions affecting the security of life and health in any locality, and in such case the said Board shall have all necessary powers to make such examinations, and it shall report the results thereof to the Governor within the limits of time which he shall prescribe for such examination and report. The report of such examination, when approved by the Governor, shall be filed in the office of the Secretary of State, and the Governor may, in relation to the matters or things found and certified by the State Board of Health to be nuisances, declare them to be public nuisances, and order them to be changed as he shall direct, or abated and removed. Any violation of such an order shall be held and punished as a misdemeanor, and thereafter the Governor may, by his order, in writing, certified under his official seal, directed to the officers of the county in which the said nuisance shall be situated, require the District Attorney, the Sheriff and the other officers of every such county, to take all necessary measures to execute and to have obeyed the order of the Governor.

§ 9. At any time at the request of the State Board of Health, or whenever the Governor shall, as hereinbefore provided, have directed an examination and report to be made by the State Board of Health into any alleged nuisance, any Board of Health of any city of the State may appoint and select any one of its officers as its representative, during such examination of any nuisance, and such representative officer shall have a seat at, and be entitled to take part in, all the deliberations of the State Board of Health, during such investigation, but without the right to vote.

§ 10. Said Board may, from time to time, engage suitable persons to render sanitary service and to make or supervise practical and scientific investigations and examinations requiring expert skill, and to prepare plans and report relative thereto. And it is hereby made the duty of all officers and agents having the control, charge or custody of any public structure, work, ground or erection, or of any plan, description, outlines, drawings or charts thereof, or relating thereto, made, kept or controlled under any public authority, to permit and facilitate the examination and inspection, and the making of copies of the same by any officer or person by said Board authorized; and the members of said Board, and such other officer or person as may at any time be by said Board authorized, may, without fee or hindrance, enter, examine and survey all grounds, erections, vehicles, structures, apartments, buildings and places. But no more than five thousand dollars in any one year shall be expended for such special sanitary service.

§ 11. It shall be the duty of said Board, on or before the first Monday of December in each year, to make a report in writing to the Governor of the State, upon the vital statistics and the sanitary condition and prospects of the State; and such report shall set forth the action of said Board and of its officers and agents, and the names thereof, for the past year, and may contain other useful information, and shall suggest any further legislative action or precautions deemed proper for the better protection of life and health. And the annual report of said Board shall also contain a detailed statement of the Comptroller of all money paid out by or on account of said Board, and a detailed statement of the manner of its expenditure, during the year last past, but its total expenditures shall not exceed the sum of fifteen thousand dollars in any one year.

§ 12. The sum of fifteen thousand dollars is hereby appropriated from the general fund for the purposes of this Act, and the expenditures properly incurred by authority of said Board and verified by affidavit, subject, however, to the limitations hereinbefore imposed, and shall be paid by the Treasurer upon the warrant of the Comptroller.

§ 13. This Act shall take effect immediately.

Passed and signed by the Governor May, 1880.

MEMBERS OF THE BOARD.

Appointed:	Designated:
Elisha Harris, M.D.,	Ch. F. Chandler, Ph.D.,
John S. Delavan, M.D.,	E. M. Moore, M.D.,
Erastus Brooks, Esq.	Jas. G. Hunt, M.D.

Ex-Officio:

Attorney-General, Hamilton Ward, Esq.
Director of the State Survey, James T. Gardner, Esq.
Health Officer of the Port of New York, Wm. H. Smith, M.D.

The Board was organized by the election of:

E. M. Moore, M.D., President; Elisha Harris, M.D., Secretary.

The first meeting of the organization was held on the 5th ult., all the members being present except Attorney-General Ward and State Surveyor Gardner, and determined upon the following committees, the President and Secretary to be members, *ex-officio:* Executive and Finance Committee, Sanitary Committee, Committee on Registration and Vital Statistics, Committee on Sanitary Legislation and Rules and Regulations, Committee on External and Internal Quarantine, Committee on Public Institutions, Committee on Drainage, Sewerage and Topography.

The following resolutions were adopted:

That the Sanitary Committee be directed to consider the subject of vaccination throughout the State.

That the Sanitary Committee be directed to report what scientific examinations or investigations, requiring expert skill, under Section 10, of the State law, should be considered by the Board.

That the Committee on Vital Statistics be directed to issue a circular to clerks of school districts and town and county clerks through-

out the State, calling attention to the provisions of Chapter 152, Laws of 1847.

That the Committee on Vital Statistics be directed to prepare the necessary methods, forms and rules for regulating the issue and use of transfer permits for the transportation of dead bodies, in accordance with Section 7 of the State laws.

That the Committee on Vital Statistics be directed to prepare the necessary methods and forms for obtaining and preserving records of births, marriages and deaths, and registration of prevalent diseases, according to Section 7 of the State laws.

That the Secretary be directed to inform his Honor the Governor that the State Board has organized and is ready to receive communications from him, in accordance with the provisions of Section 8, Chapter 322, of the laws of 1880.

That the Secretary be directed to inform all local Boards of Health in the State of the organization of the State Board, and of the time and place of its meetings, to call attention to the provisions of the law, and to request copies of all their reports and publications.

That the Executive and Finance Committee be directed to report upon the laws of the State so far as they affect the necessary action of this Board, and that the Committee be authorized, in prosecuting this work, to engage the assistance of W. P. Prentice, counselor-at-law, and to take into consideration the operation of the health laws and sanitary ordinances of New York and Brooklyn, and to prepare and print such portions of existing laws as may be necessary for the present use and reference of the Board.

The next quarterly meeting of the Board will be held in New York, and the subsequent sessions will take place on the second Wednesday of August, November, February and June.

Association of American Medical Editors.—The fifth Annual Meeting of this Association was held in this city, May 31st, Dr. Frank Woodbury, Vice-President, in the Chair, Dr. Dudley Reynolds, Secretary.

An opening address was delivered by the Vice-President.

Dr. A. N. Bell read a very eloquent Annual Address, sent on by the President, Dr. Powell, that gentleman being unavoidably detained at home by sickness in his family.

A resolution of thanks for the address and of condolence for the illness which kept the President away was unanimously adopted.

The question of adopting the metric system, after some debate, was laid on the table.

The Committee on Nominations then presented the names of the following gentlemen for officers for the ensuing year: for President, Dr. George F. Shrady, of the *Medical Record*, N. Y.; for Vice-President, Dr. R. S. Nelson, of the *St. Louis Courier of Medicine*, St. Louis; for Secretary, Dr. Dudley Reynolds, of the *Medical Herald*, Louisville. They were unanimously elected.

The Association then adjourned to meet at the next place of meeting of the American Medical Association on the evening before the sessions of that body.

THE AMERICAN MEDICAL ASSOCIATION.

The thirty-first annual meeting of the American Medical Association was held in New York, June 1–4, 1880, at which there were in attendance nearly twelve hundred permanent members and delegates, representing every part of the United States, several from Canada and foreign countries. The meetings were held in Association Hall and the College of Physicians and Surgeons. The Committees of Arrangements and Reception—Drs. T. G. Thomas, M. A. Pallen, W. R. Gillette, C. J. Pardee and their associates—were eminently successful in effecting everything needful for one of the most enjoyable meetings the Association has ever held. The receptions by Mayor Cooper, August Belmont, Esq., Drs. Thomas and Barker; the entertainment at Booth's Theatre, given by Messrs. Reed and Carnrick, Messrs. Scott and Brown, and the N. Y. Pharmacal Association; and the final grand excursion, given by Messrs. Wm. Wood & Co., greatly added to the pleasures of the meeting, and stimulated the relish for scientific work at the daily sessions.

The Association met and was called to order at 11 o'clock on Tuesday, June 1, by the President, Lewis A. Sayre, M.D., of New York.

Prayer was offered by Rev. W. F. Morgan, D.D.

Dr. T. Gaillard Thomas then welcomed the Association to New York and the hospitality of her people.

Sixteen years had passed since the Association last honored the city with a visit, and, for a moment, a pause was made to consider what those years had borne upon their wings. The struggle which at that time convulsed our land had given way to peace, and unity and concord had made glad the blessed land which we proudly called our home. Within the sixteen years many changes had taken place in the great metropolis, but none more evident than in that department upon which their affections, their best wishes, and their highest ambition were fixed. It would be the pleasure of the profession to exhibit to them, not the palaces in which New York bankers conducted the finances of the world, nor those in which her merchant princes carried on traffic which knew no limits but those of the earth, but it would be to show how those men housed and clothed the sick and needy, and to lead the Fellows until a pleasant fatigue overtook them through miles of well-appointed hospital wards, whose hygienic appointment would put to blush those of the stateliest palaces of European kings, and convince, by incontestable evidence, how true, how loyal, and how sincere an appreciation of the science and art of medicine the representative city of America had acquired. It should, to-day, be known as the "city of noble charities," the home of healthy and vigorous science.

Dr. Thomas then spoke of the great progress which had been made, through the instrumentality of the printing press, the railroad, and the telegraph, which, and which alone were what had rendered our civilization superior to that of any which had preceded the nineteenth century. Another grand result which these agencies had accomplished was the general elevation of the professional tone throughout the world, and the medical profession, represented by the American

Medical Association, might truthfully declare to the young men about to enter it that the shibboleth of success was merit.

The end and object that brought the Association together was to emit and absorb thought, to give one another friendly greeting, and the hand-shake, and the kindly interchange of expression, and to advance the interests of a profession which most closely allied man to his Maker. Let it be hoped that the work done in the Association would lead those who tread in our steps to say they met those who, like Ben-Adhem, loved their fellow-men, and strove earnestly in their cause. "In the name of the united profession of the City of New York, and, with outstretched hand and a glowing heart, I bid you welcome, thrice welcome to our home."

The list of names registered was then read by the Secretary, Dr. W. B. Atkinson, of Philadelphia, after which followed the address of the President, Dr. Lewis A. Sayre :

THE VALUE OF THE ASSOCIATION TO THE MEDICAL PROFESSION, AND THE ADVANCEMENT OF THE PROFESSION IN THE UNITED STATES.

"Who can properly appreciate the immense value which this Association has already been to the medical profession throughout our whole country? Contemplate for a moment the difference in the *morale*, the devotion to scientific investigation, the mutual respect and good feeling between its members at the present time, and its condition when the Association was organized. At that time there were often envyings, jealousies and heartburnings, fault-finding and traduction; those who had achieved distinction were frequently slandered and abused by those who had not been so fortunate; the slightest imperfection of a professional brother was magnified into such undue proportions as completely to obscure any really good qualities or attainments which he might possess, and thus the whole profession was injured in the estimation of the public by the rivalries, bickerings and jealousies that existed among its members. Now, each one seems so engaged in endeavoring to improve himself and elevate his own position in the profession, that he has no time to devote to studying his neighbor's faults, much less to accurately scrutinize and publicly herald his seeming defects. The science of medicine has been so much enlarged in all its different departments by the minute research now demanded, and by the great and rapid progress of many of its specialties, as to require that every moment of a man's time be occupied in the closest study if he would keep himself abreast with the daily improvements in our profession, and he who is thus occupied has no time to study the defects of others. By this constant effort to improve ourselves and advance our science, the tone of the whole profession is elevated, and we already see that medical men are more and more respected by the community at large.

"Let us review, briefly, what has been done by the profession in America for the improvement of medical and surgical science, and the relief of suffering humanity. Some years ago, Sidney Smith, one of England's most popular authors, said, in the *Edinburgh Review*: 'The Americans are a brave, industrious and acute people, but they have hitherto made no approaches to the heroic, either in their morality or their character. During the thirty or forty years of their in-

dependence they have done absolutely nothing for the sciences, for the arts, for literature, or even for the statesmanlike studies of politics and political economy. . . . . In the four quarters of the globe, who reads an American book? or goes to an American play? or looks upon an American picture or statue? What does the world yet owe to American physicians or surgeons? What new substances have their chemists discovered, or what old ones have they analyzed? What new constellations have been discovered by the telescopes of Americans? What have they done in mathematics? Who drinks out of American glasses or eats from American plates, or wears American coats or gowns, or sleeps in American blankets?'

"It seems to me that the Declaration of Independence, and the willingness of the Americans to sacrifice their lives to obtain it, were acts of heroism equal to any recorded in history.

"The organization of government under constitutional law, which has yielded such results as were never before obtained, is an evidence of statesmanship and of knowledge in political economy which has been seldom equaled and never surpassed.

"As to the question of American manufactures and the nations that use them, we can safely refer to the reports of our Chamber of Commerce for a satisfactory answer. American science has no need to be ashamed of its Henry and its Morse, its Bache, Peirce, Newcomb, Draper, Dana, Marsh, Gray, Hall, and its adopted Agassiz. Nor has the *American Journal of Science* anything to fear by comparison with its European contemporaries.

"But to the question: 'What does the world yet owe to American physicians and surgeons?' we will venture a more extended reply, although time permits us to refer only to a few of our professional achievements.

"First among the greatest boons ever conferred upon suffering humanity stands 'anæsthesia,' an American suggestion, and one that immortalizes the name of Morton. Who can ever estimate the value of this discovery? When we consider the fact that at every moment of time in some part of the civilized world hundreds, if not thousands, are receiving the benefits of this great discovery, the mind becomes overawed at the magnitude of the blessing, and even imagination fails to comprehend fully its benefits.

"Ovariotomy, another American contribution by the medical profession, has done probably as much toward saving life as any other surgical discovery in the nineteenth century. It was first practiced, in 1809, on Mrs. Crawford, in Danville, Kentucky, by Dr. Ephraim McDowell. At the present time it is acknowledged as a proper operation, and Dr. Peaslee said that 'in the United States and Great Britain alone ovariotomy has within the last thirty years directly contributed more than thirty thousand years of active life to woman, all of which would have been lost had ovariotomy never been performed.

"In gynæcology the whole professional world cheerfully and gratefully acknowledges the original and valuable contributions of Sims, Thomas, Emmet, Peaslee, Atlee, Kimball, Taylor, Pallen, Dunlap, Minor and others in this department.

"The new operation of litholapaxy, as performed and described by Dr. Bigelow, of Boston, is one of the grandest triumphs of modern surgery, and of which any American surgeon may justly feel proud.

"In conservative surgery we certainly compare most favorably with any other nation. In the mechanical treatment of diseases of the joints alone we are able to exhibit triumphs in surgery of which the American profession may well be proud.

"In the *Lancet* of February 14, 1880, Mr. Roderick Maclaren, M.D., Surgeon to the Cumberland Infirmary, in his presidential address to one of the branches of the British Medical Association, on 'The Advances in Surgery during the Past Twenty Years,' says: 'No account of the recent progress in surgery can justly omit the application of the principle of absolute rest to diseases of the vertebræ. It is done by enclosing the body in a plaster-of-Paris jacket. Though only introduced into this country about two years ago, it has established itself as an *incontrovertible success*.' This is another triumph for American surgery, and is justly admitted, not only in England, but in all parts of the civilized world, and we feel that American surgery has a right to congratulate herself that she has contributed this great boon for the relief of human suffering.

"In laryngology we can certainly claim Green as a pioneer, and the facts he established are now acknowledged by the entire scientific world. The improvements made in this department of surgery by Cohen, Cutter, Bosworth, Elsberg, Lincoln, Lefferts, Robinson and many others in this country, entitle us to favorable rank with other nations.

"I believe I have enumerated enough to justify the statement that if the distinguished author before referred to were to write now, he would express sentiments very different from those contained in the above quotation. Not content, however, with what we have already achieved, let us still press onward, and, accepting the motto of this great State, constantly cry 'Excelsior.'"

The President then referred to the claims which the metric system had upon the Association and the profession, and then passed to the question of the

PUBLICATION OF TRANSACTIONS,

and presented the merits of two plans—the volume and the journal form. As an example of the journal form, reference was made to the *British Medical Journal* and the British Medical Association.

"The similarity of the two associations in many respects, both in their organization and in their objects, is so great that we may possibly learn something to our advantage by carefully studying the history of the older association, and profit by her experience, and, if necessary, by her example. The importance of the subject must be my excuse for bringing to your attention many details which otherwise might possibly be regarded as superfluous. . . . . .

"These details are of importance to the American Medical Association, for they include the germs of an organization peculiarly adapted to American ideas. It is essentially democratic and entirely representative. It is dependent for its success on the intelligence, union and good-will of the members. It is decentralizing, inasmuch as it tends to the formation and the strengthening everywhere of the local societies, which have thus throughout the year the means of making themselves heard in metropolitan centres, and of communi-

cating with each other. Above all, it is a most successful and influential means of increasing the membership, and enlarging the power, and widening the basis of the Association, and of making it a living organization during the intervals between the annual meetings.

"Finally, it has the great advantage of securing the largest amount of value to each and all of the members, for the smallest possible subscription. The *Journal* becomes, in fact, a co-operative enterprise, in which *the profits resulting from their subscriptions go into their own pockets*, instead of those of any individual proprietor. They *own their own paper*. The are able to get the advantage of a powerful organization and of a first-class medical paper, at the same annual subscription as that of a medical paper by itself, and with the surplus they find funds for the promotion of public and scientific objects, and the creation of a reserve fund for future public uses.

"There seems no reason why an experiment so essentially in accord with American instincts and traditions, and one which has succeeded so well in England, should not have at least as great, if not a greater, success in America.

"One point, however, that is specially worthy of note is, that the success of the *British Medical Journal* has been largely dependent upon the manner in which it has been conducted. The weekly *Journal* did little for the Association until it fell into the hands of an experienced editor, whose ability is so generally recognized that there is no need to dwell upon it, and to whom a large and unfettered responsibility is left, although he remains, of course, personally responsible to the executive body of the Association for the right use of the power intrusted to him, as every editor does to those who appoint him. It will be necessary to find for any organ which this Association may publish, an editor of recognized position, whom the Association would accept as its worthy officer and representative in so responsible a post—a man of literary skill, scientific knowledge, and journalistic experience, or, at least, journalistic instincts and tact. He should be paid liberally; he should be treated with respect, and from him ought to be expected a serious determination to use the powers entrusted to him with courtesy and fairness, and with one sole object—the elevation of the standard of professional knowledge and interests, the maintenance of a high order of professional dignity and mutual courtesy.

"It is impossible to doubt that such a man can be found. Possibly, there may be many, and the question is one which appears to be well worthy of thorough examination by the council and members of this Association, because it seems tolerably certain that if, for the present bulky, tardy, little-read, and unproductive volume of transactions, there could be substituted an active, vigorous weekly journal, read everywhere, and with a large income such as would naturally come to it from its advertising sheet, there would be in such a change the earnest of a rapid and important growth in the numbers, influence and usefulness of the American Medical Association."

Following the President's address was the usual formal work of announcements by the Business Committee and the election of physicians present other than as permanent members and delegates by invitation.

RESOLUTION OF CONDOLENCE.

DR. S. D. GROSS, of Philadelphia, moved, with appropriate remarks, that the Association tender to their President, and through him, to the family, their warmest sympathy in their sad bereavement by the death of Dr. Charles H. H. Sayre. The motion was adopted by a rising vote.

After which the session adjourned to 10 o'clock next morning. The various Sections. I., Practice of Medicine; II., Surgery and Anatomy; III., Obstetrics and Diseases of Women; IV., State Medicine (including Medical Jurisprudence, Chemistry, Psychology and Public Hygiene); V., Ophthalmology, Otology and Laryngology, and VI., Diseases of Children, to meet meanwhile, and daily during the meeting, at their appointed places, at 2 o'clock, P. M., for the *real* work of the Association. To one of these sections only, we limit our report, and for the following admirable condensed summary we are under obligations to the ever-attentive Chairman of the Section, Dr. James F. Hibberd:

STATE MEDICINE.

The first meeting of the Section on State Medicine and Public Hygiene was held in the lower lecture room of the College of Physicians and Surgeons, on Tuesday afternoon, June 1st. The Section proceeded promptly to business, the first paper being from Dr. C. R. Drysdale, of London, England, on the Death-rate of the Rich and the Poor, which was read by the Secretary, Dr. T. F. Wood, of Wilmington, N. C. Dr. Drysdale went over the ground carefully, making his observation from an English standpoint, taking the position that the death-rate was much higher among the poor than among the rich, and this owing to their insufficient food; to their environment of filth, and to certain unsanitary habits, all growing out of their inability to do otherwise because of their poverty. Whatever their desire for better things, they had not the means to procure them, and this must continue so long as the wages of the working-classes was kept down by an over-supply of workers until just sufficient was paid them to keep them above immediate starvation, but not sufficient to ward off the consequences of inadequate food and clothing and housing. The farm was too small for the increased size of the family; the necessaries of a sanitary life were limited and were not enough for the people who had to be supplied. If we want healthier people we must have fewer of them; we can only hope to lower the death-rate by curtailing the birth-rate.

THE NATIONAL BOARD OF HEALTH.—Dr. J. S. Billings read a well-digested paper on the Mission, the Organization, the Work and some of the Results of the Labors of the National Board of Health. He pointed out how some of the errors into which many had fallen had come of confounding a National Board of Health with a National Quarantine. The Board had had many obstacles to overcome, but it had accomplished much in several directions, and in none, perhaps, more than in preventing the yellow fever from spreading beyond the narrow limits in which it had been confined, undoubtedly thereby saving many times the entire expense of the Board for all purposes.

Dr. Billings suggested that a committee of three be appointed to

report some action to be taken by the Association in regard to the National Board of Health, and the Chair named Drs. A. N. Bell, Thomas Antisell and E. M. Moore such committee, to report to a subsequent meeting of the Section.

In this connection may be noticed the action of the Section on a draft of an act prepared, and presented on Wednesday, by Dr. A. Clendennin, of Fort Lee, N. J. This, it was proposed, to urge upon Congress to repeal the laws relating to the National Board of Health, and in its stead create a Board to be composed of one member from the departments of the government, as now, with the addition of the chief of the Weather Bureau, an officer of the Engineer corps, and two members from each State and territory having a Board of Health, making a total, when all the States should be represented, of about one hundred members. The reason assigned for asking for this change was the alleged "centralized imperial character of the present Board," and that it had been inefficient and extravagant, and had fallen into disfavor with Congress. Dr. Billings pointed out a number of errors into which the author had fallen with regard to the acts and position of the National Board, and called attention to the unwieldly character and expensiveness of the proposed substitute. The measure was advocated by Dr. Clendennin, its author, and opposed by Drs. A. N. Bell, of the SANITARIAN, E. M. Hunt, of Metuchin, N. J., and E. G. Janeway, of New York, after which, on motion of Dr. T. O. Edwards, of Wheeling, W. Virginia, it was declared the sense of the Section that Dr. Clendennin's proposed measure was unsatisfactory and impracticable, and that the National Board of Health, by virtue of its efficiency, in both scientific work and executive management, was entitled to confidence and support.

Dr. Jas. F. Hibberd, of Richmond, Ind., Chairman of the Section, in his official address before the Association, also devoted a large portion of it to a review of the organization, the methods of procedure and the results of the labors of the National Board of Health, reaching the conclusion that such an organization was indispensable, and that the present Board had done much and valuable service, was entitled to, and should receive, the endorsement of the Association as the representative body of the profession of the United States. The Chairman's address was referred to the Section, and when it came up for consideration, Dr. Bell, from the Select Committee on Dr. Billings' paper, submitted the following resolution, to be presented to the Association in General Session, which was done on Friday morning and unanimously adopted, viz.:

Resolved, That a general sanitary organization is a necessity of every enlightened commercial nation, and the service of the National Board of Health of the United States, since its organization, has been such as to impress us that both in its personnel and organization it is entitled to the confidence of the Government and the people, and we join the American Public Health Association and the National Academy of Sciences in earnestly recommending to Congress that the suggestions and estimates of the Board receive their legal sanction, believing that the money asked for is necessary to the work of the Board, and will be a most judicious expenditure of money.

UNSANITARY ENGINEERING AND ARCHITECTURE.—Dr. A. N. Bell, of New

York, presented the subject of Unsanitary Engineering in a paper replete with facts of defective construction in buildings, both public and private, and rich in suggestions and plans for the betterment of future edifices of whatever kind. Dr. Bell stated that in the city of New York cellars were dug down two or three stories into the ground, and then the surrounding surface was covered with impervious asphalt or the like, rendering it impossible for the mephitic gases of the earth to escape to the air otherwise than through the building itself. Attention was also called to the faulty construction of drains and sewers allowing seepage into, and poisoning of, the surrounding soil until it became impossible to measure the extent to which this might become the generator of disease in the human family. The paper covered a wide range of important points in relation to the sanitary condition of the dwellings and places of resort and their environment of communities with great aggregates of people. These points, with the comment on them by Drs. Antisell, Whiting, of New New York; Lee, of Philadelphia, and Moore, of Rochester, made a practical lesson on the subject of Unsanitary Engineering, and the means for correcting it, both pleasant and profitable to the members of the Section. A fuller abstract of this paper follows on other pages.

Wednesday, June 2d. The Secretary read a paper prepared by Dr. R. C. Kedzie, of Lansing, Mich., on the

Temperature of Living Rooms.—Dr. Kedzie reviewed the various methods of heating living rooms, pointing out wherein they were severally less or more valuable as a means of maintaining the proper temperature of rooms occupied by people for the sundry ends of civilized life. The paper was a practical lesson on the subject it treated of, teaching what to do and how to do it, to secure comfort and maintain health.

Dr. A. C. Carroll, of New Brighton, N. Y., read a thoughtful essay on the

Personal Factor in the Etiology of Preventable Disease, but it was only indirectly connected with sanitary affairs.

Dr. E. C. Angell, of New York, read a paper on

Hot-Air Bathing as a Means of Promoting Health and Preventing Disease, in which he gave an account of baths in different countries, and spoke of bathing accommodations for the poorer classes in large cities. There was no discussion.

Thursday's session was full of business and interest. Dr. Wines, an assistant from the Census Bureau, exhibited and explained the blanks to be furnished to every physician in the United States, to elicit his aid in perfecting the statistics of the idiotic and insane. The service in nowise interferes with the duties of enumerators, but is simply to afford one means of correcting any imperfections in the returns they may make from the answers they receive to their questions.

On motion of Dr. Billings the following resolution was sent to the General Session of the Association, and was by it unanimously adopted on Friday morning:

Resolved, That this Association approves of the plans proposed by the Superintendent of the Tenth Census for the collection of data with regard to the insane and idiots of the United States, and that it

urges upon physicians that they should aid in this work, as far as possible, by carefully replying to the schedule of queries on this subject which will be sent them from the Census Office.

The Moral Treatment of the Insane was the subject of a paper read by Dr. C. W. Page, of Hartford, Conn., taking enlightened views of the psychological condition of the insane, and presenting practical methods for their management, urging that such mental attributes as they still possessed, available for the purpose, should be assiduously cultivated to keep their thoughts away from themselves by having other things to think of. The value of appropriate labor for the insane was dwelt upon and forcibly illustrated.

The Intervention of Physicians in Education was the subject of a paper read before the section two years ago, by Dr. E. Seguin, of New York, which was referred to a Select Committee, of which Dr. R. J. O'Sullivan, of New York, was chairman. Dr. O'Sullivan submitted his report, but owing to a throat affection, Dr. Bell, by request, read it for him. It pointed out the urgent necessity for the supervision, by physicians, of the structure and management of school buildings, and of the curriculum and methods of study also, by narrating how our rising generation was suffering in physical and mental health from defects in both these particulars.

Dr. W. F. Thoms, of New York, and Dr. J. Quimby, of Jersey City, both spoke of the necessity of reaching the laity in some impressive way, insisting that something should be done to secure better school accommodations.

Sanitaria.—On this subject Dr. Bell, in the absence of Dr. Bowditch, presented the report of the committee appointed for its consideration two years ago. The conclusion arrived at was, that it was not expedient to recommend any particular sanitarium, but to summarize the natural conditions of all the mineral wells in the country with a view to their intelligent use.

Dr. A. L. Carroll, of New Brighton, offered the following, which was adopted:

"*Whereas*, The value of vital statistics depends upon their scientific accuracy, as regards the etiology as well as the diagnosis of disease, this Section would urge upon the Association the importance of recommending that every medical school within its jurisdiction establish a Chair of Public or State Medicine as an essential part of its curriculum."

Dr. J. V. Quimby, of Jersey City, read a paper on the

Criminal Use of Chloroform.—In the Smith murder case he had been asked, as an expert, whether chloroform could be administered to a person asleep without awaking him. There being no reliable authority on this point, he undertook to determine it by experiment. He detailed three cases wherein he had been able to produce complete anæsthesia in persons during natural sleep without disturbing their slumber.

Dr. W. H. Lathrop, of Tewksbury, Mass., read a paper, and by diagrams on the blackboard illustrated the proper methods of

Constructing Alms-Houses, so as to secure the highest sanitary good, and at the same time be of easy and successful administration. These, with his written description, afforded an instructive lesson on this theme.

Dr. Thomas Antisell, of Washington, D. C., read an exceedingly valuable paper on

SUSPICIONS OF POISONING. He thought criminal poisoning was on the increase in the United States, and that for property reasons and others we might, in the future, look for a still further increase. The symptoms of poisoning from various toxic agents were detailed, and the means of diagnosis in some of the more obscure instances were intelligently narrated. The author thought the coroner ought to be provided with a competent analytical toxicologist in all cases where he had grounds for the faintest doubt.

The closing paper was read by Dr. W. F. Thoms, of New York, giving an account of the operations of humane societies in this and other countries.

On motion of Dr. Bell, a request was sent to the Association, asking that hereafter the title of Section four, be simply "State Medicine," and the Association on Friday morning unanimously so ordered. J. F. H.

OFFICERS OF THE ASSOCIATION FOR THE ENSUING YEAR AND NEXT PLACE OF MEETING.

President—John T. Hodgen, M.D., of St. Louis, Mo.

Vice Presidents—1st, W. H. Anderson, M.D., of Mobile, Ala. 2d, Levi G. Hill, of New Hampshire. 3d, Henry T. Holton, of Vermont. 4th, H. Carpenter, of Oregon.

Permanent Secretary—W. B. Atkinson, M.D., of Philadelphia, Pa.

Treasurer—R. Dunglison, M.D., of Philadelphia, Pa.

For Librarian—William Lee, M.D., Washington, D. C.

Chairman of the Section on Practice of Medicine, Materia Medica, and Physiology—Dr. William Pepper, of Pa. *Secretary*—Dr. T. A. Ashby, of Maryland.

Chairman of the Section on Surgery and Anatomy—Dr. H. McGuire, of Richmond, Va. *Secretary*—Dr. D. A. Eve, of Tennessee.

Chairman of the Section on Obstetrics and Diseases of Women—Dr. James R. Chadwick, of Boston, Mass. *Secretary*—Dr. J. Taber Johnson, of Washington, D. C.

Chairman of the Section on State Medicine—Dr. J. T. Reeve, of Wisconsin. *Secretary*—Dr. R. G. Young, of Arkansas.

Chairman of the Section on Ophthalmology, Otology and Laryngology—Dr. D. S. Reynolds, of Ky. *Secretary*—Dr. S. M. Burnett, of Washington, D. C.

Chairman of the Section on Diseases of Children—Dr. A. Jacobi, of New York. *Secretary*—Dr. W. H. Bradford, of Boston.

For Members of the Judicial Council, to fill vacancies—Drs. J. K. Bartlett, of Wisconsin; F. Staples, of Minnesota; D. R. Wallace, of Texas; J. S. Billings, of U. S. Army; J. H. Warren, of Massachusetts; and A. T. Woodward, of Vermont.

The Committee recommended that the next meeting of the Association be held in the City of Richmond, Va., on the *first Tuesday* in May, 1881.

Committee of Arrangements—Drs. Cunningham, McGuire and Cullen, of Richmond, Va., with power to select others to make a committee of seven.

The Committee further recommended that the Committee on Necrology and the membership of the Section on Medical Jurisprudence, State Medicine and Public Hygiene remain as now constituted. The report was adopted unanimously.

UNSANITARY ENGINEERING AND ARCHITECTURE.*

By A. N. Bell, A.M., M.D.

Sanitary Engineering and Architecture *should* imply the construction of works, facilitating and protecting the purity of air, water and soil as the essential conditions of human health under all circumstances. But it is the misfortune of modern sanitary science that engineers and architects have, for the most part, treated it as an innovation not to be regarded at all, or only in its grosser parts, instead of an effort to incorporate and elaborate it as the most important of all contributions to their art and science. Hence are to be found habitual negligence or practical ignorance of sanitary science in the attempted following of, or improvement upon more enlightened ancient works, and consequent recurrence or aggravation of diseases, which properly-executed sanitary works would wholly prevent.

The soil-drains of Rome and other ancient cities have been adopted by modern engineers as typical sewers—diverted to uses for which they were never intended—and soil drainage, the purpose for which the oft-cited cloacæ of the ancients were constructed, is well-nigh or wholly neglected.

While sanitary science has, for the last forty years, been enlarging its bounds by grasping the natural history of diseases, pointing out the nature of their causes and the way they operate, exhibiting the vast extent of mortality from causes wholly removable ; showing, by reason, experiment and analogy, how life may be prolonged, health regained and general happiness increased by the removal and prevention of the impurities of air, water and soil, skilled engineers and architects—skilled in the arts which please the eye and, for a time, flatter the pride of their admirers—habitually fail to recognize the presence of anything which they cannot see or feel : the diffusibility of gases, the emanations of organic matter in process of putrefaction, the permeability of material substances to moisture and gases, the relations of the air and water to soils, sites and structures are ignored as conditions unworthy the attention of those whose chief aim it is, to be represented more by the magnitude and cost of their works than by their utility.

Forgetful or ignorant of the importance of distinctive and appropriate means for the collection and disposal of soil and surface water and sewage, modern engineers have generally adopted the plans of the ancients for the first of these purposes only as being equal to both, have accepted the great subterranean conduits of the ancients, or built others similar to them of *porous* material, fit only for soil drainage, as the ideal structure for the reception of, and—but not at

* In abstract from paper read before Section on State Medicine, American Medical Association, June 1, 1880.

all adapted to—the conservation and carriage of sewage. The consequence is that the substance of these conduits, the soil and the houses connected with them, are pervaded with the *materies morbi* of unsanitary engineering; and the water carriage system condemned, because forsooth engineers have equally failed to profit by the arts of the ancients, and the science of physics. From the former they should have long since learned that other provision was made for the treatment of sewage by collection, precipitation, overflow and utilization in a totally different set of receptacles; and that refinements in this art, as compared with much of modern construction, may yet be learned from the revelations of that most renowned temple of wisdom, the Temple of Jerusalem. Moreover, tracings of this knowledge may be found all the way down through the ages of the most cultivated peoples, insomuch, that even in London, no longer ago than in 1815, it was a penal offense to discharge sewage or other offensive matters into the subterranean conduits. These were intended and built exclusively for the collection and carriage of soil and surface waters.* "Cesspools," not such in London as were the Pools of Siloam and the Fountain of the Virgin, which overflowed into and enriched the king's gardens in the Valley of the Kedron, but such, nevertheless, as admitted of separate treatment and removal of sewage, and prohibited its flow into the potable waters of the populace.

The connection of house drains and the delivery of sewage into the soil drains of London with outfall into the river, was first made compulsory in 1847, at the very beginning as it were of modern sanitary science, and before the danger of this process, which has in recent years involved millions of pounds sterling for its correction, was duly appreciated.

And from the latter, from a knowledge of physics and its application to sanitary science, engineers are inexcusable for not having practically learned that a subterranean conduit may be full to overflowing with invisible poisonous gases, and the more dangerous in the inverse ratio to the amount of visible sewage, not only filling the sewer, but saturating the porous material of which it is made and the contiguous soil. And, moreover, when thus filled with gas, subject to the compression arising from the inflow of storm waters, the blockade of rising tides at the outfall, or the force of the wind into the exposed mouths of such sewers at low water, no amount of trapping, no ventilation, no mechanical contrivances whatever, can effectually resist work so well adapted to the promotion of disease and death—so unworthy the name of *sanitary* engineering.

And fully of a piece with engineering in this regard is architecture. It may be true as recorded, that when the Arabs abandoned their tents and took to huts, consumption was among the first fruits of the change. But in so far as domiciliary residence is promotive of consumption—this greatest destroyer of the human race—it is extremely doubtful whether the filthiest hut ever tenanted by Arab, or cave by hermit, excelled the efforts of modern architects. For if to architects in general a knowledge of physics and of the most common causes of disease be conceded, it is apparent that most of the public buildings of our cities, such as hotels, insurance buildings, many

* 35th Annual Report, Registrar-General, 1875.

churches, court-rooms, public-school buildings, assembly halls of various kinds, some hospitals and many of the mansions of the rich, as well as the tenements of the poor, have been constructed with special reference to their deadly effects upon those who occupy them.

A knowledge of the composition and the common properties of the air is supposed to be among the acquirements of a common-school education; and reasonably, architects, if not indeed school commissioners, carpenters and masons, ought to know something of building-sites and the relations of the air and water to soil and building material; but that they really do not is to be inferred, else they are murderers. The hardest rocks only are perfectly free from, and impenetrable by air, while all softer stone, both natural and artificial, concrete, unglazed cement, brick and tiling, contain air, and when dry, freely permit its transfusion. And soils, depending upon their nature, commonly contain from ten to fifty per cent. of air or other gases.

The nature of the air and other gases in soils and building material is of the utmost importance to human health.

Carbonic acid naturally exists in the atmosphere in the proportion of about four volumes per ten thousand. Any increase is detrimental to health, and double this proportion, or eight parts in 10,000, long used, is dangerous. The well-recognized authority, Dr. Angus Smith, has shown by actual experiment that ten parts of carbonic acid in ten thousand of air, or what amounts to the same thing, one part in one thousand, produced in fifteen minutes an increase in the number of respirations from eighteen to nineteen per minute, which increase remained the same up to forty-five minutes. The pulse was lowered in twenty-five minutes from seventy-three to seventy-one beats, while at 45 minutes it was 72 per minute. With 2½ volumes of carbonic acid in 1,000 of air, the pulse, at first 70 beats per minute, increased to 73 at the end of ten minutes, and at the end of half an hour was lowered to 69; meanwhile respiration increased from 17 to 21 per minute. With 5 volumes of carbonic acid per 1,000, the pulse at first 76, and the respiration 17, at the end of 40 minutes were represented by the numbers 71 and 24.

But besides this effect of carbonic acid *per se*, which architects and engineers should have learned by common observation among operatives in mines and tunnels, an excess of carbonic acid in the atmosphere of any place is ordinarily accepted as an index of other impurities.

Pettenkofer,* Hartley,† Cuningham,‡ Nichols,§ Chaumont‖ and others¶ have shown that in this regard, while all soils contain an excess of carbonic acid, none are wholly free from other impurities, while the emanations from many are well known to be highly dangerous.

---

* Lectures delivered in Munich and Dresden: Translated by T. P. Corbally, M D. THE SANITARIAN, Vols. III. and IV.; and by Augustus Hess, M.D., *Popular Science Monthly*, Vol. XI.

† Air and its Relations to Life.

‡ The Soil in its Relation to Disease.

§ Sixth Report Massachusetts State Board of Health.

‖ *Lancet*, 1873.

¶ Parkes' Practical Hygiene, Fifth Edition.

Pettenkofer's investigations in this direction began in 1854, in his study of the cholera, but chiefly at that time with reference to the influence of ground water. But in 1870, in experiments in the alluvial soil in the vicinity of Munich, he found that the proportion of carbonic acid increased with the depth, and that the amount varied with the season, being greatest in summer and least in winter.

As summarized by Professor Nichols, in the Sixth Annual Report of Massachusetts State Board of Health: "The largest amount at a depth of 4 meters (13½ feet) below the surface was 18.38 parts in 1,000 (by volume)," or more than 45 times as much as in the normal atmosphere; "this was August 7. The largest amount at a depth of 1½ meters (5 feet) was 14.15 parts per 1,000; this was July 31. The smallest amount at a depth of 4 meters was 3.01, February 8; at a depth of 1½ meters, 1.58, February 28." Subsequent determinations, in the vicinity of Dresden especially, under the direction of Professor Fleck, have shown that in some places at the same depths much larger proportions exist—one reaching the enormous amount of 80.63 parts in 1,000, in October, 1873. Professor Nichols' own determinations in the Back Bay lands of Boston, show that at the depth of from 3¾ to 5½ feet, about half the depth of ordinary cellars, the amount of carbonic acid varies from 1.49 to 2.26 volumes per 1,000, and inversely as the height of the ground water. "The results" (of his investigations, he remarks) "are very similar to those obtained by Pettenkofer in the gravel soil at Munich." The bearing of these researches, and their relation to the subject under consideration, is best shown in the common practice of building deep cellars with porous floors and walls in foul soils. Many of the most costly buildings, public and private, in New York and other American cities, are over cellars more than twenty and some of them more than thirty feet deep, and in the midst of lots filled in with foul garbage. School-houses, with a thousand or more sittings, built by salaried architects, restricted to less than 100 cubic feet of air space for each person, are built over foul soil, perforated with leaky sewer and gas pipes, and sometimes honeycombed with old privy vaults and cesspools, with cellars from seven to ten feet deep covered with a single course of porous brick laid on mud without cement! Churches there are, built at costs, severally, of hundreds of thousands of dollars, which have their sacrificial altars laid deep down in soil indescribably foul; university and college buildings are in the same category, and these—all—as the school-houses, public offices, hotels and the abodes of merchant princes, are furnished with warming appliances of the most effectual kinds, and with no provision for ventilation, in many cases, except the windows, or such as is worse than none—air-shafts extending from the cellar with *inlet*-openings on every floor. They are surrounded by impervious sidewalks, and the streets in many cases paved with granite blocks or asphalt, and such as are not are subject to being frozen in cold weather. What is the state of the atmosphere in such structures under such circumstances? Aspirators —veritable cupping-glasses—the only means of exit by which the carbonic acid and other mephitic gases from soil loaded with impurities of every kind, finds a way of escape! The results may be learned by a study of the mortality statistics.

THE MICHIGAN SANITARY CONVENTION.

Detroit, January 7–8, 1880. Abstract, continued from April Number.

VENTILATION OF DWELLINGS AND SLEEPING ROOMS.

By DUNCAN MCLEOD, M.D.

Before science discovered the pernicious effects of impure air it was not surprising that people did not ventilate. The properties of the air we breathe being discussed, the Doctor made the statement that Detroit is the healthiest city in the Union because of its clean streets, and because of the wide area over which her dwellings now spread, but not to the superior ventilation of its houses. Fully 35 per cent. of all the deaths in this city were due either totally or in part to the influence of foul air.

After rehearsing statistics and reports, the Doctor said:

Here we have the solution of the whole mystery; it is not in the external atmosphere we must look for the greatest impurities, but in our houses. Why is it that the city is so much more unhealthy than the country? It is not because the air in the street is so much more impure, but because the houses are so close together that the air has not the same chance to purify. A family living in the filthiest streets in the city, would, if they had a sufficient supply of fresh air, be more healthy than if they spent their winters in the finest residence in the city with air-tight rooms. The poor man as well as the rich should feel that he has no more valuable friend than fresh air. The frequent recommendations to avoid night air are simply advices to smother ourselves, because the foul, poisonous exhalations from our lungs cannot be removed from our chambers without being replaced by night, as there is no other fresh air at night but night air.

The Doctor next went at length into the manner of heating dwellings in all nations and countries, and then came to the simple modes of expelling foul air and admitting fresh air. In summer this is easily done through the doors and windows, but in winter we are obliged to resort to flues.

THE PRINCIPLES OF VENTILATION.

Thomas A. Parker read a paper entitled "The Principles of Ventilation."

Of all kindred subjects, that of ventilation is the most simple and least understood. Many do not even care whether they breathe good air or bad, especially if there be any trouble or expense involved. Even the greatest, best and cheapest of all ventilators—the sun—is excluded by rich and poor alike. One of the laws of nature is that heat and gas ascend. By acting upon this we can drive them not only upward but outward from our dwellings. Keep the house light, warm and dry both in summer and in winter, and admit as much sunshine as possible. In winter, when a house becomes once heated the air feels very dry and unpleasant, but the plan of placing pans of water on stoves and furnaces to moisten the air is highly objectionable. The better way is to expel the hot air and let in air of a colder temperature. The pans put on the stove for the above purpose are generally empty or filled with dirty water.

The chimney, as a ventilator, is the sheet anchor of a house. The chimney can, to a very great extent, be made to purify the air from cellar to attic, in nearly every room. Ventilating rooms by means of an open window at night should be practiced with great caution. There are many mild nights when the air is filled with the germs of disease.

Of all parts of the house the cellar requires the greatest attention as regards cleanliness and pure air. In the cellar may often be found those elements of disease—dampness, heat and decaying vegetable matter, under the name of miasm. The cellar should be connected with the nearest chimney.

Plants in flower are considered objectionable in sleeping rooms. This is due to volatilization.

Mr. Parker spoke of the ventilation of theatres, and closed his paper by recommending that more attention be given to the ventilation of stables. This from a humanitarian point of view.

NERVOUS EXHAUSTION.

Dr. W. H. Rouse, of Detroit, read a paper on nervous exhaustion, with special reference to its presence in school children.

One of the first symptoms is weariness without sufficient cause. This feeling of lassitude has associated with it fullness in the head, headache and other pains, and impaired powers of mental application. Insomnia, insanity, dementia, or even death may ensue. The effects of nervous exhaustion on young ladies, induced by being overtasked in school, were described as something shocking. She is wearied beyond measure by the slightest mental exertion, and she finally becomes hysterical. She drags herself from one consulting room to another without relief, and at last settles down into hopeless, helpless invalidism. An example from the Detroit public school is that of a young lady who is of the class termed apt pupils. For some time she complained of lassitude; slight exertion caused great fatigue, headache, neuralgia, etc., but these attracted but little attention until insomnia with hallucinations alarmed her friends. She was removed from school and placed under treatment, but several weeks elapsed before she could be trusted from home without an attendant. The lassitude continued, the physician's prohibition of mental pursuits was disregarded, and the benefits of an asylum for many months sufficed to restore her wreck of her former self.

Though our public school system is the crowning glory of this Republic, its evils as well as its beauties should be watched with care. At the beginning of the term, especially in the primary grades, the pupils are full of animation; at its close many complain of weakness and great fatigue on slight exertion. Some seem completely exhausted when they reach their rooms in the upper stories of our too high school houses. This is especially the case with the girls, who do not enjoy so much open air exercise as the boys. Not a few of them have left school, some by medical advice, in consequence of the excessive weariness.

Since the schools were formed for the pupils, not the pupils for the schools, their influence in the causation of this malady should be known, and, so far as possible, removed. Some of these causes are readily suggested:

1. The curriculum comprises too great a variety or extent of subjects.

2. The length of time, twelve years, being required for the public school course, it is believed that this time might be shortened one or more years with material benefit.

3. The quality of the instruction. Many books and subjects may be studied by a pupil at school, and when he is done competent judges may fairly question the benefit derived therefrom. Almost everything depends upon the quality, not quantity, of scholastic training. A few subjects so taught as to be available for practice at all times is worth many volumes memorized simply.

The teaching of modern times is too superficial, or lacks the practical. Children are crammed with definitions, rules and words of text-books, which are about as intelligible to them as sanscrit. Their memories become overburdened. They strive to recall words of the books and memorize new ones, but, failing to keep pace with the class by this method, they begin to weary, and nervous prostration soon ensues.

Drs. Whalen, of Hillsdale, and Chase, of Otsego, strongly indorsed Dr. Rouse's views.

John S. Billings, Surgeon U. S. A., gave an extemporized talk on the general subject of ventilation, one of his interesting points being that carbonic acid gas does not seek the bottom of a room, but that it is equally diffused throughout the room. There are three things we cannot have together: Cheapness, heating and good ventilation. If we have heat or good ventilation we have got to pay for it.

The Medical Department of the army was alive to the importance of sanitary work, and, to show its appreciation, the department has already begun the publication of an index covering the entire field of sanitary literature, some 400 or 500 pages of which are already stereotyped. This work is to constitute a portion of the library in the office of the Surgeon-General.

WATER FOR HOUSEHOLD USES.

Dr. A. B. Prescott, of Ann Arbor, read a paper on "Use of Household Filters for Potable Water." His practical conclusions are:

1. A good portable filter, when in good order, removes from eighty to ninety per cent. of the putrescible organic matter from rain water.

2. Such a filter, in good order, supplied with unpoluted rain water, collected and stored with due cleanliness and with strictest exclusion of ground drainage, furnishes a very pure water (containing an average of only three-tenths, and, at most, seven-tenths of the maximum safe quantity of nitrogenous organic matter).

3. A good filter, in good order, cannot be at all depended upon to make polluted water safe for drinking. A polluted water, probably containing animal excreta, is liable to carry specific poison, as that of typhoid, and no filtration can be at all trusted to make it safe.

4. In case of any potable water of doubtful purity, as regards organic matter, the danger from its use is very greatly lessened by its filtration through a good filter in good order.

5. A good charcoal filter, used for clean rain water, and not kept submerged over half or two-thirds of the time, but left with the filter-bed

drained off a part of every day, will remain in good order for considerable time, and may be relied on for at least a year. Air is far better than the purest water to cleanse a good charcoal filter. The better the filter the more readily it is cleansed of organic matter by atmospheric oxidation. Due care of a filter requires that all suspended matters should be removed before the water reaches the filter-bed. This is well accomplished by the sponge, interposed between the reservoir of unfiltered water and the bed. Of course, water that is loaded with impurities (especially dissolved impurities) will far sooner clog a filter-bed and make it worthless. It is only when supplied with approximately pure water that the slight organic residues can be removed by atmospheric oxidation, and the filter be considered an almost permanent means of purification.

6. Water should not be stored after it is filtered. Filtered water is like the manna of the Hebrews ; it must be obtained fresh every day. Organic growths multiply in even pure water. These bodies are highly nitrogenous, perhaps taking nitrogen from the air, and they should be removed. Filtration does it.

The best filter-bed is bone charcoal ; perhaps the next best is wood charcoal. But, whatever the material, it should be so disposed that the water must all be subjected to capillary attraction as long as possible, in going through the bed. A good filter-bed must be fine and close enough, so that, at any given point, the liquid does not pass through faster than by drops.

"THE CITY OF DESTRUCTION"

Was the significant title of a paper read by Dr. R. C. Kedzie, of Lansing, President of the State Board of Health. The Doctor's paper began with an apt allusion to the City of Destruction from which fled Pilgrim, whose history Bunyan so quaintly told.

This is the hour of iconoclasts, and they say that the pilgrim is a myth, and that there is not, and never was, any City of Destruction. Believe it or not. I know there is a City of Destruction, for mine eyes have seen it and my feet have walked its streets. The Memphis of to-day stands upon a river more noble than the Nile, on which stood the Memphis of old.

The Doctor then proceeded to give a description of Memphis, standing on a bluff on the banks of the Mississippi. Its sanitary problems were much simpler than those of New Orleans, whose streets were some feet below the level of the river. There is ample fall for complete drainage, and the sewers could all be made short. One of the largest rivers in the world sweeps by the whole front of the city at the rate of four miles an hour. With a water park three miles long and a mile wide, what should prevent Memphis from being one of the healthiest cities in the world? Something of the old superstition still lingers with us ; we often say, "The man was taken sick ;" we rarely say, "He made himself sick." Nature has no pity, and mercy is with her a word unspoken and unknown. Disease comes to us either by inheritance or from our surroundings. Nature says with curt emphasis, "Be clean or die." The epidemics which sweep over the earth from time to time are but the executioners of this court of physical justice in permanent session. The hot bed

which brings them into life is decomposing animal matter, and the soil which ripens the dreadful harvest of death is unsanitary dirt.

The Oriental plague, known in Biblical times as "the pestilence," still has its home amid the squalor and filth of the East.

Dr. Kedzie gave a vivid description of the appalling filth and dirt which prevailed in the dark ages, when to be filthy was to be God-like, and rehearsed the awful destruction of the plague which followed. Asiatic cholera and filth fevers were next treated of, and the Doctor at last came to the main question of his subject—

YELLOW FEVER.

This has its home amid the filth of tropical America. It seems to be a disease distinctive of the Western world, and prevails at all times in Cuba, from whence it is brought in summer to all our principle sea-ports. By timely quarantine regulations, and by keeping such sea-ports in good sanitary condition, the disease is localized, and seldom flashes up into an epidemic. But where the sanitary problems are very difficult, as in New Orleans, it becomes a matter of great difficulty to exclude yellow fever.

We thus see that all the great epidemic diseases which scourge mankind originated in filth. "Man is a poisonous animal;" his touch brings rottenness. The ocean of air and the ocean of water have been provided to cleanse and purify him, but they are themselves defiled by the contact, and when once they have done our service they must be cast out among the unclean. The human form divine must some day be hidden away to conceal its loathsomeness. Where men gather in large cities, the conditions of life must be guarded with jealous care, to prevent the conditions which favor the development and spread of the same pestilence. Human filth is the hot bed of epidemic diseases, and maintains their existence even when they prevail as endemics; the culmination of the filth fans the endemic into the epidemic.

Yellow Jack on the Gulf and Yellow John on the Pacific lead the sanitary and the political problems of the day. You have little sympathy with the hoodlum yell, "Yellow John must go," but you will all fervently join in the refrain, "Yellow Jack must go." I presume you are not familiar with yellow fever, and only picture it as a dangerous disease. Let me sketch a few lines of the picture. When the fever breaks out in a city, it usually begins at one or more points and spreads from such centres in a slowly receding wave, which moves outward at the rate of about 200 feet a day. The eye does not see it and no human sense can mark its progress, but the line shows where the invisible scythe is passing. The inhabitants of a whole block may be smitten down in a single night, while as yet no mark is seen in contiguous blocks. Behind the wave line are delirium and death; before it heroic fortitude or wild despair!

Let us trace the successive stages of some one patient. First, he is suddenly seized with a deadly chill, which threatens to throttle its victim; the minutes of shivering agony stretch out to hours, but at last the reaction comes; the vital heat which has sunk down, down towards death, at last rallies, and the bodily temperature rises to normal heat, then passes on to 101 deg., to 102 deg., to 103 deg., when

the doctor looks anxious ; to 104 deg., when he gloomily shakes his head ; to 105 deg., when hope ceases—to 106 deg., when death is certain. The patient has passed from the stupor of the chill to the wild delirium of the fever ; the skin becomes a ghastly yellow, or dusky brown ; blood spots appear here and there under the chin ; the eyes are yellow as gold, bloodshot, heavy, expressionless, unobservant ; the mouth is parched, the tongue cracked and bleeding ; from the gums exudes a dark brown, bloody fluid ; the mind is heavy and wandering, muttering incoherently, perhaps, of cooling streams and gushing fountains. More and more irregularly move the wheels of life, and all perception and consciousness seem swallowed up in profound coma, when, perhaps, the patient suddenly throws up his arms in mortal agony, the dreadful black vomit bursts forth from his lips, staining everything it touches with inky blackness, and he sinks back—Dead !

The paper then dramatically describes the funeral of the victim, and then Dr. Kedzie took up the epidemic of 1878 in Memphis. One would have thought after that fearful harvest the city would not have needed another warning, but the citizens argued that there had been heavy and protracted frosts, and that the fever germs were undoubtedly all killed. The city was urged to purify and disinfect and drain and ventilate, but with great unanimity the city did nothing. When the warm weather came two cases of yellow fever were reported in Memphis, and they had not been imported. This disposed of the theory that yellow fever cannot hibernate in the United States.

MILK.

G. A. Watkins, of Detroit, read a paper on "Supply of Milk in Cities." The amount of milk consumed in Detroit is something like 10,000 gallons a day, and it is furnished from three sources of supply—by shippers who buy of farmers and ship it in by rail or large wagons, and from their stores here deliver it to consumers; second, by producers who have milk farms or dairies near the city; third, by people who keep a few cows in small stables and yards in the city. Just how much of this large supply is pure and wholesome, and how much is adulterated and unfit for use, must be left to the consumer to judge. There is no doubt, however, that much of the mortality among children can be set down as resulting from the use of adulterated milk; or, what is just as bad, milk made from unwholesome food.

The writer advocated the appointment of an expert inspector of milk, whose duty it shall be to constantly inspect the milk that is sold, and also the premises whence the supply comes; also that the milk venders be required to pay a license, which should be revoked if the holder fail to sell a good article. The only safe way is to buy milk of some person on whom you can rely and then pay a reasonable price for it. In any event let the State and city Board of Health take this matter in hand, and see if remedies cannot be found that will add to the health of the community at large and save the lives of the children.

TRAINING SCHOOLS OF COOKERY.

The paper prepared on this subject by a Detroit lady (Mrs. Wm. Jennison) and presented to the convention, after expressing surprise

that cookery schools are a novelty in this country, looks at the subject of establishing such schools from two points of view:

First, the importance of the question as to the food to be eaten not only for the preservation of life and the maintenance of health, together with the effect upon character of certain kinds of food and the failure on the part of working classes to make nutritive and economical preparation of their food. "These faults might be remedied, at least in part," says the paper, "through the facilities afforded by cooking schools."

Second, the paper shows how much further the poor man's wages would go if his wife and daughter knew how to buy and cook properly the most nutritious food within their reach, which may be taught in schools where thorough training for young girls for domestic service would be provided. "It is evident," says the writer, "that no better work could be done by Christian benevolence for the improvement of the physical condition of the poor working classes—nothing which will more truly help them to help themselves." The following outline of a plan was submitted as a starting point for discussion of the subject:

The object of the school shall be to give instruction in both the theory and practice of cookery. The elementary branches of plain wholesome cooking shall be taught as the groundwork of domestic comfort and economy. Classes are to be formed of those wishing to fit themselves for teachers or cooks. Public classes may be provided for those who are seeking a practical knowledge for their own homes, and private classes for higher kinds of cookery to be provided for whenever the sale of a sufficient number of tickets to cover the expense attending them can be assured.

Instructive lectures are to be given on the articles of food in daily use and inducements are to be offered to all who desire it to learn how to use them. Cooked food shall be sold to defray expenses. A class for girls over 10 years of age to be held every Saturday, when lessons shall be given in the making of bread and of nourishing, economical soups. Cooking for the sick room shall form an important branch of the instruction.

With such a beginning the writer thinks the work would develop naturally, and hails, as a favorable augury for the future of cooking schools in the United States, the fact that the Bureau of Education devotes one of its "circulars of information" to the subject, giving full statistics of European and American training schools of cookery. (Copies of these circulars are in the hands of the Secretary of the convention for distribution among all who may desire to study the subject.) Exhaustive details relating to successful cookery schools at home and abroad, showing the great success attained in England, Scotland, France, Holland, Prussia and Switzerland, and in New York, Boston, Washington, Illinois, North Carolina and Indiana, Kansas and Iowa—all of which are self-supporting, or nearly so—after which there was incorporated in the paper the chief points of an interesting account by "W. D. W.," in the *Free Press*, of an experiment in the direction of domestic training in the city of Gothenborg, Sweden. The paper closed as follows:

The absence with us of those clearly defined and impassible divid-

ing lines which in other lands settle many questions as to station and occupation, makes the condition of our working classes an anomalous one. Until this social chaos shall have had time to work itself out into some settled result, the difficulties arising from it may, perhaps, be lessened by a persistent effort on the part of intelligent and cultured women to infuse into the class of girls that furnish recruits for domestic service, a wiser and truer estimate of its worth and real dignity. Now it is thought of by our young women as placing them at the very foot of that social ladder, whose top-most round seems to them attainable at some future day, and it is quite natural that, to an ignorant girl, duties which she undertakes at will, and for which no previous training is required, should seem only worth the doing until something better shall be within her reach. It is evident that training schools of cookery would do much to elevate the occupation in the eyes of those who follow it; and a little genuine knowledge as to the chemistry of food on the part of wives and mothers in the upper class could not fail of happy results to themselves as well as, by way of example, to those in humbler station, who are so ready to imitate their dress and their manner of life.

Perhaps we underestimate the mortal importance to the young of some guidance in a useful direction, even in purely material things. Early training in domestic details is the only sure method of acquiring a mastery of them, and certain independence awaits the woman who is thoroughly versed in the routine of the household life. But there is a higher aspect of the question. The manifold snares that beset the young girl in the lower and middle classes may perhaps be shorn of some of their power for evil if we can excite an early interest and ambition to learn thoroughly the duties to which they are looking forward as a means of livelihood. And may not the developing, feeding and fortifying of this worthy aspiration, which comes readily to almost every young heart, be a real obedience to the divine precept to "Overcome evil with good."

(*To be continued.*)

———o———

Removal of Strong Odors From the Hands.—Ground mustard, mixed with a little water, is an excellent agent for cleansing the hands after handling odorous substances, such as cod-liver oil, musk, valerianic acid and its salts. Scale pans and vessels may also be readily freed from odor by the same method.

A. Huber states that all oily seeds, when powdered, will answer this purpose. In the case of almonds and mustard, the development of ethereal oil, under the influence of water, may perhaps be an additional help to destroy foreign odors. The author mentions that the smell of carbolic acid may be removed by rubbing the hands with damp flax- eed meal, and that cod-liver oil bottles may be cleansed with a little of the same, or olive oil.—*Druggists' Circular.*

PROTECTION FROM VENEREAL DISEASES.

To the Editor of the SANITARIAN :

SIR : The intention of Dr. J. Birkbeck Nevins, of London, to do me the honor to notice my paper on "The Protection of the Innocent and Helpless Members of the Community from Venereal Diseases and their Consequences," read before the American Public Health Association, having been heralded to me, I confess my disappointment at finding his effort, in THE SANITARIAN of June, such as to preclude anything like an argumentative reply.

He has merely selected a couple of paragraphs of my paper as the text for an article leveled at the advocates of the legal repression of prostitution, and has carefully avoided referring to the real purport of that paper.

As evidence of the illiberal temper of mind in which he has undertaken his criticism, I have only to call attention to his misrepresentation of my meaning in the sentence, "There is an army of doctors overspreading this country, and annually recruited by thousands—why not transform these men, of whom so many idly and hungrily await the prey stricken down for them by disease, into busy workers, keenly on the scent to avert that which now they can but welcome?" In his commentary on this sentence, Dr. Nevins repeats —AN ARMY OF DOCTORS "waiting idly and hungrily for the prey stricken down by syphilis," using quotation marks to convey the impression that I had suggested that the physicians of the land should cease to be healers of the sick, and become spies of syphilis. Dr. Nevins must be too intelligent to honestly attach any other meaning to my words than that physicians were better actively employed in sanitary work than waiting, many of them idly and needily, in their offices, for the advent of victims of unsanitary conditions. Were there any doubt on this point, the context removes it. It is, therefore, disingenuous in him to intimate that I had only syphilis in view. But this deliberate perversion of meaning, and the equally careful avoidance of real issues, characterize not only Dr. Nevins, but the New York Society for the Prevention of Licensed Prostitution, which, through its President, has also been making me and the committee of which I am chairman, the object of attack.

Dr. Nevins' paper chiefly attempts to demonstrate that hereditary syphilis is neither as common nor as terrible as I have represented, and that venereal diseases have actually increased in England since the Contagious Diseases Act. With respect to the latter statement, I have no doubt that many more cases have been reported since the passage of that act, for the reason that they are now recognized and recorded when they had formerly been unnoticed; while the opinions of the gentlemen he quotes in the matter of inherited syphilis would doubtless have been sufficiently refuted had he quoted those who entertained opposite views. Indeed, one of his own witnesses, Sir William Jenner, declares in answer to the question, "Is there anything which occurs to you with reference to the prevention of syphilis in the Army and Navy which you wish to state to the committee?"—"I think it is most important that the prevalence of the disease

should be, if possible, modified—*speaking from my knowledge of its influence on children,* IT IS MOST TERRIBLE."

The experience of American physicians will, I am sure, confirm all I have said about the danger to the community of the enthetic diseases. I cannot believe that a higher standard of morals renders this danger less in England, and I am, therefore, constrained to infer that Dr. Nevins, and those of his countrymen who think with him, read rheumatism, scrofula, tubercle and rickets, where we recognize the consequences of venereal contamination. As to the thorough eradicability of poison, I have had too many evidences, during my own professional career, to believe that the venereal taint is ever wholly removed. Like the influence which vaccination exerts upon the economy, like the impression produced upon the system by the eruptive diseases of children, and by yellow fever on the adult, syphilis leaves its mysterious imprint upon the organism, to be transmitted "unto the third and fourth generation."

Were the disease as restricted in its extent as Dr. Nevins assumes, it would still be the duty of the sanitarian to endeavor to repress it, and the American Public Health Association will hardly be deterred from its duty by the outcries of a few individuals, who, in their pretentious honor of the recognition by the authorities of the fact of the existence of prostitution, profess a virtue, to which their own passive tolerance of the vilest forms of harlotry in their very midst, demonstrates their flimsy claim.

Very respectfully, your obedient servant,

ALBERT L. GIHON, M.D.,
Medical Director U. S. Navy.

1736 *I Street, Washington, D. C.*

MENU.

The Chinese Cuisine.—A long article in the *Débats* on the subject of the food supply in China corrects some popular errors, and may, perhaps, afford hints for those humanitarians who clamor for the introduction of new viands for the poor in England. Amongst the dishes which are really most highly appreciated in the Celestial Empire are several which might be provided at a low cost in the markets of Smithfield and Billingsgate, if only the inhabitants of London could be brought to regard as a mere prejudice their dislike to the favorite foods of a more ancient people. The shark's fin is a delicacy which is rarely omitted from the *menu* at a Chinese feast. It is one of the "great classic dishes" forming the *pièces de résistance* of an official banquet, and is eaten either in the form of a joint, garnished with crabs, or served up in small pieces in cups placed before each guest. The consumption of rats, though it seems to be somewhat on the decline, is the cause of a very important traffic in the principal towns of certain districts, and especially in a street in Canton called Hing-Loung-Kai. Here these animals may be seen in enormous multitudes hanging up in the shop windows amongst chick-

ens and ducks and geese. They are for the most part dried and salted, and when in that state are esteemed a sovereign recipe for those whose hair is getting thin. Besides the dishes peculiar to the Celestials alone, there are a variety of differences in their mode of cooking and eating foods unknown to our *cuisine*. Hams, for instance, are kept for a year, or even two years, buried in heaps of sawdust, which imparts to them a taste of wood much appreciated by the *gourmet*. Broad beans are fermented, and, after being mixed with salt, form a very favorite sauce eaten with all sorts of viands. Finally the habit of eaten "rotten eggs," which sounds so strange to European ears, is explained by showing that the so-called rotten egg is only a duck's egg preserved for a long time in an air-tight envelope made of ashes, chalk, tea-leaves, and a number of other strange substances, until the yolk turns first to a green color and then to a fine black, when it is considered fit to be eaten.—*Caterer.*

Sweetbreads (Stewed).—Trim some sweetbreads, and soak them in warm water till quite white, blanch in boiling water, and then put them in cold water for a short time. When cold, dry them and put them in some well-flavored white stock; stew for half an hour. Beat up the yolks of two or three eggs with some cream, a little finely minced parsley and grated nutmeg, pepper and salt to taste; add this to the sauce, put it on the fire to get quite hot; dish the sweetbreads, pour the sauce over it, and serve.—*Caterer.*

Croquettes of Chicken.—Take of the breast of a roast fowl two parts, of boiled tongue one part, and of truffles one part. Mince all these very finely, and mix them together. Melt a piece of butter in a saucepan, stir a little flour into it, then put in the above mixture, and moisten with a small quantity of stock; add some finely minced parsley, pepper, salt, and nutmeg to taste. Stir it on the fire for a few minutes, then stir in, off the fire, the yolks of one or two eggs beaten up with the juice of a lemon and strained. Spread out this mince (which should be pretty stiff) on a marble slab, and when it is nearly cold fashion it into small portions in the shape of balls or of corks. Dip each in a beaten-up egg, and then roll it in very fine baked crumbs; after the lapse of an hour fry the croquettes, in hot lard, to a golden color. Serve on a napkin with plenty of fried parsley.—*Caterer.*

Oatmeal, says an Irish paper, is a food of great strength and nutrition, having claims to be better known and more widely used than it is at present. Oatmeal requires much cooking to effectually burst its starch-cells, but when it is well cooked it will thicken liquid much more than equal its weight in wheaten flour. The oats of this country are superior to those grown on the Continent and the southern part of England, but certainly inferior to the Scotch, where considerable pains are taken to cultivate them; and it is needless to point out that the Scotch are an example of a strong and thoroughly robust nation, which result is justly set down as being derived from the plentiful use of oatmeal. Dr. Guthrie has asserted that his countrymen have the largest heads of any nation in the world—not even the English having such large heads—which he attributes to the univer-

sal use of oatmeal, as universal it is, being found alike on the tables of the rich and the tables of the poor—in the morning the porridge, and in the evening the traditional cake. The two principal ways of cooking oatmeal are porridge and cake (bannock), which I will describe, and also some other modes of cooking, in order to afford an agreeable variety of dishes. First, then, we will commence with a recipe for porridge: To three pints of boiling water add a level teaspoonful of salt and a pint of coarse meal, stirring while it is being slowly poured in; continue stirring until the meal is diffused through the water—about eight or ten minutes. Cover it closely then, and place it where it will simmer for an hour; avoid stirring during the whole of that time. Serve hot, with as little messing as possible, accompanied with milk, maple syrup, or sugar and cream. To make oatmeal cake, place in a bowl a quart of meal, add to it as much cold water as will form it into a soft, light dough, cover it with a cloth fifteen minutes to allow it to swell, then dust the pasteboard with meal, turn out the dough and give it a vigorous kneading. Cover it with the cloth a few minutes, and proceed at once to roll it out to an eighth of an inch in thickness; cut it in small pieces, and partly cook them on a griddle, then finish them by toasting in front of the fire. —*American Miller.*

Patent Flour.—Almost everybody knows of the flour, but not every one understands what it is. Stripped of technicalities, this is about the story of its manufacture. The best flour used to be made of winter wheat. Spring wheat yielded either much less in quantity, or else so much of the bran got into the flour in its manufacture that its color was intolerably dark. The wheat would be ground and then bolted. In the refuse—the bran and middlings—would be included a large proportion of the weight of the spring wheat, and this would sell more particulary for feed for horses. Now the best of flour, and the most expensive, is made of this very refuse of the old-fashioned process. It all came out of the discovery of a way to draw out the bran. Under the new process the wheat is ground about as before. The first result is an ordinary flour sold for exportation. Then the remainder is taken and put upon great horizontal sieves, and while agitation is going on there, an ingenious system of draft is rushing up through, and carries off the bran. What is left is the glutinous portion of the wheat, the most nutritious and most productive, and out of this, purified now by the drawing off of the bran, we get our new process flour. The result of the discovery of the process has been to make the poor spring wheat of Minnesota and upper Wisconsin the most valuable kind of grain.—*American Miller.*

Scotch Woodcock.—There are so many ways of cooking eggs, that one could almost undertake to send up a dish of eggs for every day in a week, not having one the same. Besides poached eggs, boiled eggs, fried eggs, and rumbled or buttered eggs, there is "Scotch Woodcock"—which is nice either for breakfast, luncheon, or *petit souper*. It consists of hard boiled eggs chopped up, mixed with a few teaspoonfuls of good anchovy sauce, and then laid on slices of hot buttered toast. The eggs may also be treated in the same way, and mixed with a portion of minced ham or tongue previously heated over the fire in a little butter. Eggs, so nice and

nutritious in themselves, are an excellent vehicle for any other flavor, be it fish, flesh, or fowl.—*Caterer.*

Imported Food.—The main feature in recent official trade returns is the increased sums we are paying for food from abroad. The strain put upon the country by the succession of bad harvests will, there is reason to believe, be more severely felt during the next nine months than it has been during the last four years, and we must be fully prepared to face an altogether abnormal expenditure on food staples. In October, as compared with the corresponding month of last year, we paid £1,100,000 more for corn, and £354,000 more for wheat meal, nearly £400,000 more for potatoes, £287,000 more for butter, and £200,000 more for tea. These are startling increases, and the potato and corn figures bear eloquent testimony to the failure of our staple crops. Egypt excepted, the increased importation of corn and meal may be said to have come entirely from America, which is every year becoming more indispensable to us as a food provider.—*Caterer.*

Chicken Cheese.—Boil two chickens till tender; take out all the bones, and chop the meat fine; season to taste with salt, pepper and butter; pour in enough of the liquor they are boiled in to make moist. Mould it in any shape you choose, and when cold turn out and cut into slices. It is an excellent traveling lunch.

Good Cheese is always close-grained, cuts smooth, but has a slight regular roughness of surface, yields to the pressure of the finger, breaks easily, but does not crumble, has a smooth, elastic rind, breaks down mellow and rich, but with no harsh feeling between the thumb and finger, dissolves readily in the mouth, but has no strong or rank flavor, and leaves a relishable taste. Most people like such cheese, but seldom getting it, they fancy that cheese has for them no special relish. If only such cheese were thrown on the market the home consumption would double in a year, and in a few years it would be tenfold what it now is. It is a great mistake to keep home consumers feeding upon the inferior grades of cheese, and it is a greater mistake to make cheese of oleomargarine, or in any way increase the amount of the inferior grades.

More Vile Pies.—Some fifteen boarders in a Brooklyn boarding house recently partook of Meringue pie for dessert. Four or five hours afterwards all of them were taken sick. Dr. Sherwell was summoned, and on examination concluded they were suffering from metallic poisoning—*verdigris*—from the action of lemon juice on a copper kettle used for stewing the fruit of which the pies were made. By prompt treatment with lime-water and raw eggs, they all recovered. The messenger who went to the druggist for the lime-water, learned that the clerk had put up a large quantity for another family, who had also been poisoned in the same way; and another case, from the same cause, had been brought to the attention of the Board of Health. All the pies were obtained from the same baker, who, when spoken to about the matter, did not think the poisoning was caused by eating the pies. He had sold fifty of the same lot, and had himself, with his family, also partaken of them without any ill effects. He admitted, however, that the lemons had been cooked in a copper vessel, but claimed that it had first been thoroughly cleansed.

Editor's Table.

Long Beach—the New Summer Resort.

No people in the world are more highly favored than New Yorkers and Brooklynites in the extent, convenience and luxurious appointments of the sea-shore. Few cities, indeed, can compare with New York in the beauty of the shore at her feet, Battery Park, the cooling-off place of thousands of working people, who here congregate with their families every eve in summer to enjoy the invigorating sea-breeze, and the welcoming place of thousands more daily from the overcrowded cities of Europe.

Long Beach is the longest stride yet made in the ascent of Aladdin's summer ladder. Old Long Island, with her hundred miles of "sea-girt shore" and ever-coming surf on the one side, and more of shady nooks and estuaries on the other, with magnificent drives and hunting-grounds between, and railroad accommodation, placing all at the very doors of the millions round about, who would revel in the abundance of pure air, pure water and pure food, affords stores of health and pleasure scarcely equaled, and surely not surpassed by any similar area in the world.

Coney Island, the jumping-off place at the extreme west end, with its graded accommodations to suit everybody, and amusements adapted to all tastes—all the ways of the world on a sea-beach and in the surf—with its forty thousand bathers every Sunday—is well nigh indescribable, and yet so familiar to all New Yorkers and Brooklynites as to need no description; and Rockaway, the oldest seaside resort in the country, where the Dutch settlers of Manhattan and Long Island used to take their wives and babies two hundred years ago, and where the statesmen of colonial times used to congregate to enjoy clam-bakes and surf-bathing, again looms up with accommodations of all kinds and qualities, and a new hotel on a scale no less grand than Coney Island's Manhattan and Brighton.

But both Coney Island and Rockaway possess the disadvantage of many masters, and consequent want of concentrated executive control.

Long Beach is a distinct link in the chain of Long Island beaches, bounded on the west end by East Rockaway inlet, and on the east by the inlet of Hempstead Bay, with a broad creek between it and the main land. It contains about 1,800 acres, with a surface frontage of nearly seven miles in a straight line of hard-packed sand, entirely

free from the offensive refuse of New York, which defiles that portion of the sea-beach which falls within the scope of the harbor currents. The only refuse ever found on Long Beach is wreckage and the drift of the Gulf Stream, such as palmettos, sugar-canes and cocoanuts. The sand slopes out gently, so that six feet depth of water is reached at a distance of about 500 feet from the margin; the current at all times being steadily westward. The hotel, now nearly finished, is, taken in all its appointments, probably the most complete establishment of its kind anywhere to be found. The main building is 900 feet long and 150 wide, with a 25 feet space around the entire structure, forming a spacious piazza. On the first floor are restaurants, cafés, bars and wine-rooms, corridors, lavatories, offices, retiring-rooms, and everything necessary for the most perfect comfort and leisure. Immediately in the centre of the building is the great refreshment-room, 175 by 80 feet, and on each side are two corridors, each 50 feet wide, running across the building from north to south; another corridor, 50 feet wide, runs along the centre, crossing these two and communicating with the café on the east and the restaurant on the west. Across the centre corridor on the south are the directors' and booking offices and the ladies' retiring-rooms. From these corridors open the gentlemen's lavatories, cloak-rooms, ticket-offices, a large billiard-room, a small wine-room, several private dining-rooms of different sizes, and all the serving rooms necessary to wait upon 5,000 persons at the same time. Around the café and restaurant are porches 50 feet wide, separated by folding glass partitions, so that they can be made one at a moment's notice. Wherever it is possible these glass partitions are used in preference to stationary walls, and the effect is very light and airy. There is a terrace 30 feet wide running around the south, east and west sides, which, being only 3 feet lower than the first-floor level, makes a fine promenade.

The working departments are in the basement. In the centre, grouped around a brick shaft, 25 by 20 feet, and 90 feet high, are all the kitchens, laundries, and offices that produce either heat or odor. At the base of the shaft are fans, driven by steam, to bring in fresh air and drive out the foul. To add to the working convenience, a track enters the building at the northwest corner, and, running under the north porch, distributes all the supplies at their various head-quarters. Ice, meats, vegetables, milk, beer, fuel—all have their allotted places, and are kept cool and clean. Down the long axis of the basement runs an unobstructed corridor, 40 feet wide, and on the south side of this are the servants' rooms. This corridor is lighted by electricity, and forms the great ventilating trunk. These two floors are

devoted entirely to the taking care of the great bulk of the public. The second floor is reached by flights of stairs 20 feet broad, and has a porch 25 feet wide running entirely around it. At this level the building narrows in by the width of the porch of the first floor. In the east end of the second floor are parlors, dining-rooms, and public rooms for the guests of the hotel, and in the west wing select parlors and sleeping-rooms. The third floor is the same size as the second, less the porches, and contains sleeping-rooms, baths, and lavatories. Just over the centre of the main gable, and facing seawards, are several snug little parlors, shielded by a loggia along the front, and forming breezy reception quarters for those wishing to avoid the bustle below. The fourth floor is composed entirely of sleeping-rooms. Thus there are on the first floor accommodations for 5,000 persons at a time, and on the second, third, and fourth floors about 300 bedrooms, with the necessary parlors, dining-rooms, and accessories.

The sanitary arrangements have been made a subject of primary importance from the outset. The drainage, sewerage and plumbing works have been arranged and constructed under the special supervision of an expert, with a view to preventing nuisance, and the best possible protection of health and comfort. The water supply is by pipes from the main land, pure and plenary.

Architecturally, the building is a very handsome one, being built in the Queen Anne style, with low roofs and projecting gables running up, with half timberings and shingled spandrils.

A little to the west, and in front of the hotel, is a large music pavilion, so built, however, as to present no obstruction to the view, and with light and moveable sounding-curtains, adjusted to reflect the sound back upon the audience on the terrace and porches.

Westward—down the beach—are the bath-houses, of which there are 250 special rooms for the guests of the hotel; 200 exclusive for ladies, and 550 public ones. These are all in rows under sheds, flanked by a broad overhanging grand stand, capable of accommodating large numbers for viewing the bathers. In the rear of the bath-houses are the necessary offices for drying, cleaning and keeping the bathing suits, etc. At the head of the passage-ways, between the rows of bath-houses, are flights of steps leading down under the Grand Stand to the beach, protecting the bathers from being gazed at in going to and returning from the surf. Another admirable feature of this department is a fresh-water shower, set up in each section, ample for every one to take a fresh water douche before returning to his sleeping room.

Of Cottages and Villas, there are already finished and in process of

completion sixteen. These are all handsomely and substantially built and fully furnished, even to the kitchen wares, and the sanitary arrangements have been under the same superintendence as the hotel.

There is also a large livery stable for the accommodation of such gentlemen as care to take their horses, the hard smooth beach being insurpassable for driving.

No saloons or other establishments of the kind are allowed on the beach, which is to be devoted entirely to cottages and villas; this is one of the chief virtues of the place. Being all owned and controlled by the Long Beach Improvement Company, instead of being given over to bars, restaurants and squatters of every kind, the accommodations are wholly of and adapted to a better class of buildings and patronage, with all necessary appurtenances in keeping therewith.

Taken altogether, Long Beach possesses advantages and inducements superior to any other sea-side resort hitherto offered. The distance from Hunter's Point by the Long Island Railroad is twenty-two miles.

From New York, Pier 17 East River, adjoining the foot of Wall Street, fast boats run in 15 minutes to Hunter's Point, connecting with all express trains for Long Beach, and making the actual time from Wall Street to the hotel 50 minutes. The other ferries to Hunter's Point are from Thirty-fourth Street, East Seventh Street, and James Slip, near the Brooklyn Bridge. The Thirty-fourth Street spur of the New York Elevated Railroad takes passengers direct to the ferry.

An "Open-Air" Carpet-Cleaning concern recently squatted at Bay Ridge, L. I., and for some days scattered its dust, whether simple dirt or dirt charged with whatever of disease the use of the carpets in sick rooms could impart to it, all about the neighborhood. The people who had wells drank a smaller quantity of disease-infected water for the time than those who used rain-water gathered from roofs covered with this dust; but all had to inhale this dust, or stop breathing.

The Health Commissioners of the town wisely took the matter in hand and subdued the nuisance, after it had existed for a few weeks only. It is well that such power existed, and that it was promptly exerted; for it is hard to conceive of an operation better calculated to spread disease through a neighborhood than open-air carpet-beating.

The same company, it is reported, first essayed to establish themselves in Brooklyn, but on being prohibited by the health authorities, betook themselves to Bay Ridge.

The name "Open-Air" is all that commends the process to any one; for certainly the rough process of beating carpets with rough sticks is liable to injure the carpets, while it cannot so thoroughly clean them as by the more modern process which has taken the place of the older style of carpet-beating with sticks by hand-power.

The Promised Analysis of Higgins' "German Laundry Soap" is unavoidably postponed on account of the summer vacation of our analyst; it will appear hereafter. It affords us much gratification, meanwhile, to acknowledge the approbation so generally expressed for the attention we have called to the importance of pure soaps in a sanitary point of view, and in particular to the superiority of the "German Laundry," which is deservedly taking the place of many impure varieties. We are assured from numerous sources that it is unquestionably the best soap for all laundry purposes in the market, and the most economical for the purchaser. All these experiences and assumptions, however, we shall hold subject to the crucial test of analysis, by which it is our purpose not only to try this and other varieties of soap, but ere long, and systematically, many other articles of the utmost importance to every household use.

Wilhelm's Quelle Mineral Water, recently introduced into this market by Messrs. Mack and Brunler, 7 Barclay Street, New York, is said by *The Lancet* (June 7, 1879) to be, of all mineral waters, the one which most nearly possesses the proportion of saline constituents contained in the blood. Thus—

"Bulk for bulk, the proportion of chlorides is about half those of blood, and about the same as those of milk, and they are just sufficient to elicit and strengthen the bouquets of the more delicate wines. The quantity of iron is less than half that of blood, and it exists in the same form—viz., carbonate of the protoxide. The proportions of sulphates and of phosphates are less than those of blood; but even in respect of these, as well as of iron, the water may evidently be considered as a natural restorer of the essential saline constituents of the blood. Regarded from a medicinal point of view, we note traces of iodide and bromide of sodium and of carbonate of lithium; while the presence of a moderate amount of the carbonates of sodium, of calcium, and of magnesium confer antacid properties."

On the evidence of several eminent analysts, it is absolutely free from the slightest trace of organic matter. It is richly charged with carbonic acid (re-charged with its own natural gases at the spring, the agents say), and is a delightfully refreshing effervescing water, admirably adapted to certain forms of indigestion, and an excellent diluent for persons in full health.

"The Sanitary Reservoir Wash Stand" advertised in this number, has most commendable qualities to all who would avail

themselves of elegant lavatory appointments devoid of untidy pitchers and slop jars, and without any risk from waste pipe connections. It is especially adaptable to elegant country houses and offices—indeed, to all rooms and places requiring wash stands not connected with water supply and waste pipes; it has a fountain and waste of its own.

Juvenile Smokers.—A British physician, observing the large number of boys under fifteen years of age on the streets with cigars and pipes in their mouths, was prompted to examine the breath of this class of smokers, and for that purpose selected thirty-eight boys between the ages of nine and fifteen. In twenty-two of these cases he found various disorders of the circulation and digestion; palpitation of the heart and more or less marked taste for strong drink. In twelve there was frequent bleeding of the nose, and twelve had slight ulceration of the mouth caused by tobacco. The doctor treated them for their ailments, but with little effect until the habit of smoking was discontinued, when breath and strength were soon restored. The effect of tobacco in creating a taste for strong drink is unquestionably very great. If the testimony of some tobacco users and medical men is of any weight, one of the most radical methods of keeping the young from being led to intemperate drinking is to deny them tobacco.

Literature.

Memphis.—First Annual Report of the Board of Health of the Taxing District of Shelby County, Tennessee, for the year 1879, by T. G. Thornton, M.D., President. Published by the Citizens' Auxiliary Sanitary Association. It is a glance at Memphis as it was before the breaking out of the epidemic of 1878, its paralyzed condition at the time of the recurrence of the epidemic in 1879, with an account of the beginning and the first year's progress of sanitary work. Dr. Thornton frankly confesses at the outset the wanted appreciation of the unsanitary conditions of Memphis hitherto—not by any means peculiar to Memphis—acknowledges the importance and benefit, and promises the continuance of the work begun by and carried on under the auspices and with the assistance of the National Board of Health. The house to house inspection, made by inspectors of the National Board, under the special supervision of Dr. F. W. Reilly, brought to

light many hitherto hidden nuisances—such as privy-vaults and cisterns in close proximity, in the cellars; the storage of soiled bedding, personal dunnage, and other furniture which had been used by the sick, and a general system among the lower classes living in shanties, of stowing away filth in dangerous proximity to living apartments, food and water. Of 4,130 cisterns used for drinking water, Dr. Charles Smart, U. S. Army, found on analysis of the water, 570 were leaky and contained dangerous sewage contamination; 950 more were probably leaky—suspicious; 1,328, or about one-third only, contained pure water. The water from Wolf River, the "Water Company's" water was also found to be far from satisfactory.

There were nearly 6,000 sub-surface privy vaults in use, 3,668 of which were in a foul condition. And of the whole number of cisterns and wells which furnished the greater part of the potable water, 3,508 were within contaminating distance of privy vaults. There were several miles of rotten wood pavements throughout the city; stock yards and slaughtering pens were at random—"individuals engaged in the business selected such places as best suited their convenience and interest," and the streets were the common receptacles of garbage of every kind.

"The first practical step, after organization, was to remove the accumulations of six months, of every conceivable character of garbage, from the public thoroughfares, the streets and alleys, through many of the latter of which it was impossible to pass a wagon because of the positive obstructions caused by actual accumulations. From the want of organization in every department of the new government this work of street and alley cleaning, and in many instances of street repairing, devolved upon the Board of Health, under whose supervision it was done, being let to contract. The contractors therefor accomplished the work of surface cleaning and removal of all accumulations from the public grounds and thoroughfares within the space of five weeks."

This is being followed by a system of sewerage advised by the National Board of Health, after a careful inspection and survey under the direction of Col. Geo. E. Waring, Jr. The rotten wood pavements have been removed and stone is in process of substitution, rookeries have been demolished, filthy cisterns abandoned and destroyed, privy vaults cleansed and filled up, dangerous furniture disinfected or destroyed, and the whole populace aroused in the interest of self-preservation by means of public and private sanitation.

The importance of a plenary and wholesome water supply, well regulated abattoirs and school hygiene are urged as special subjects of importance demanding public attention.

The Auxiliary Sanitary Association is particularly commended, as

it deserves to be, for its zeal and material aid in the progress of sanitary work "at a time when the city government was most embarrassed for means, and when the law creating the Taxing District was undergoing judicial investigation by the Supreme Court."

The report concludes with a summary of the mortality for 1878–9, and particularly from yellow fever, with which the readers of THE SANITARIAN are already familiar.

The progress of sanitary work in Memphis is in the highest degree commendable, in particular for the public spirit of the Auxiliary Sanitary Association and the city authorities, who have shown a most praiseworthy zeal in the effort to act upon the best advice obtainable for the promotion of the public health. Her example is eminently worthy of following by many other cities ere they too are overtaken by a like calamity.

Rocky Mountain Health Resorts,* is a book valuable alike to physicians and to a large class of general readers—to all who take an interest in the effects of climate, and particularly of the influence of high altitudes on persons predisposed to or affected with disease of the lungs. Few persons have had better opportunities, and none have made better use of them in observing and comparing the influence of high altitudes on pulmonary disease, than the author of this work. He has also collected, and here presents, a large amount of information on consumption from other sources, available for all who would understand the varying conditions of this disease under different circumstances, insomuch that the physician, sufferer, or life insurance officer, as the case may be, who would correctly appreciate the relations of the situation to the case in hand, will herein find himself brought face to face with well-defined conditions of locality and climate, of great practical value *before* taking the risk. And not alone of high altitudes, but all the climatological and geological conditions, and the properties of the mineral waters throughout the Rocky Mountain region are brought under review, and their influences marked with a degree of precision not to be found in any other work.

---

* Rocky Mountain Health Resorts. An analytical study of high altitudes in relation to the arrest of pulmonary disease. By Charles Denison, A.M., M.D., Reporter to the International Medical Congress, Philadelphia, 1876, on "The Influence of High Altitudes upon the Progress of Phthisis." Author of Reports on Climate and Consumption, to the American Medical Association, etc. 12mo., pp. VIII.–192, with illustrative charts and maps. Boston: Houghton, Osgood & Co.

Frankland's Water Analysis* is a condensed summary of the best practical methods, comprehending complete and partial analyses of potable water—determinations necessary and unnecessary for sanitary purposes. Two Parts and Appendix. Part I: Water Analysis without Gas Apparatus. Part II: Water Analysis Requiring Gas Apparatus. Appendix: Reagents, tables, typical analyses, average composition of various waters, standards of purity, Conclusions and Recommendations of the Rivers' Pollution Commissioners. The author's world-wide reputation will commend this manual to all sanitarians, and they will not be disappointed in finding all the essentials of the important subject of which it treats, in the smallest possible space consistent with clearness of expression and practical illustration.

The Healthy Infant† is a well and forcibly written physio-philosophical book, comprehending the conditions of healthy infants as dependent upon healthy parents, parental care and education. And, although the author may be regarded as being a little ultra in his views of sex in education, on this, as on the subject of heredity and other questions to which all parents and teachers should be alive, he gives sound reason for the faith that is in him. It may be read with both interest and profit by physicians, parents and teachers.

The Prevention and Cure of Chronic Consumption‡ is an overwrought title to a little book which promises too much. Persons may and doubtless do sometimes recover from consumption; and that it may often be prevented by regularity of living and systematic outdoor exercise, void of fatigue and inclement weather, is still less questionable. But that it can be cured by such means as this book advocates will not be believed by any one who has ever seen or knows much of the disease.

---

* Water Analysis for Sanitary Purposes. With Hints for Interpretation of Results. By E. Frankland, Ph.D., D.C.L., F.R.S., Vice-President of the Institute of Chemistry of Great Britain and Ireland, Corresponding Member of the Institute of France, of the Academies of Science of Berlin, St. Petersburg and New York, of the Sanitarian Society of Dresden, Professor of Chemistry, etc., etc., etc. 12mo., pp. VIII.–148. Illustrated. Price $1.00. Philadelphia: Presley Blakiston.

† "The Healthy Infant," a treatise on the healthy procreation of the human race, embracing the obligations to offspring; the management of the pregnant female; the management of the newly born; the management of the infant; and the infant in sickness. By Tandy L. Dix, M.D. 12mo., pp. 140. Price, $1.25. Cincinnati, O.: Peter G. Thompson.

‡ Prevention and Cure of Chronic Consumption. By David Wark, M.D., Professor of Obstetrics and Diseases of Women and Children in the United States Medical College. New York: Author's Publishing Company. 12mo., pp. 100, cloth. Price, 80 cents.

The Transactions of the Medical and Chirurgical Faculty of Maryland for 1879, 8vo., pp. 126, contain ten stated reports and papers classified under Reports of Sections on Surgery, Practice of Medicine, Obstetrics and Gynecology, Materia Medica and Chemistry, Sanitary Science and Psychology, and three volunteer papers. The report of the section on sanitary science consists of a single paper only, by Jas. A. Stewart, M.D., briefly summarizing sanitary science in general, a little of what others have done, and a brief of the comparative mortality statistics of twenty-two large cities for 1877, measured by which Baltimore, for 1878, shows a specially favorable record—18.44 per 1,000 of population—the lowest ratio ever reached by that city since the records have been kept. The Annual Address before the Faculty on the Physiology of Secretion, by Prof. H. Newell Martin, M.A., D.S., M.B., of John Hopkins University, dwells primarily upon the phenomena of cell life, and its relation to the nutrition of the tissues, which may be summed up under the term of nutrition—comprehending the chief functions of living cells.

San Francisco Health Report, J. L. Mears, M.D., Health Officer, for 1879, on an estimated population of 305,000, records 4,493 deaths, a decrease of 484 on the previous year, and giving a ratio of 14.75 per 1,000. 743 are classed as zymotic, or 16.5 of the whole number, being also a decrease on the previous year of 284. The decrease is attributed to the obliteration of stagnant pools, vacating houses unfit for habitation, and an increased number of sanitary inspectors. The sanitary condition of Chinatown is reported better than usual, but still greatly overcrowded and filthy, and the "cubic air ordinance" urged as an absolute necessity. The number of Chinese in the city is supposed to be not less than 30,000; of this population the number of deaths was 523, or about 17.43 per 1,000—a ratio much less, certainly, than the tenement house population of New York, or any other of our cities. And this is the more remarkable since "the Chinese have no physicians recognized by our laws." The registration of births is confessedly so imperfect as to be of no value. Marriages recorded (supposed to be accurate), 2,240—155 less than in previous year.

The Medical Profession and Alcohol.—The National Temperance Society has published in pamphlet form the address by Dr. Benjamin Ward Richardson, F.R.S., on the occasion of his inauguration as President of the British Medical Temperance Association. It is a scientific plea for total abstinence, and embodies an earnest appeal to the medical profession to join in the pending vitally important warfare against alcoholic beverages. 12mo., 83 pp., price 10 cents: J. N. Stearns, 58 Reade St., New York.

The Report of Proceedings of the Association of Medical Officers of American Institutions for Idiotic and Feeble-Minded Persons, of sessions 1878 and 1879, contain papers on "Intemperance as a Cause of Idiocy," by G. E. Shuttleworth, B.A., M.D., Medical Superintendent of the Royal Albert Asylum, at Lancaster, England; "Temporary Loss of Speech from Shock after a series of Epileptic Fits," by Fletcher Beach, M. B. M. R. C. P., Medical Superintendent of the Clafton Asylum, Eng.; "Offspring of First Cousins," by Mrs. C. W. Brown, Barre, Mass.; "Recent Progress in the Training of Idiots," by E. Seguin, M.D., New York; "Relation of Speech or Language to Idiocy," by Henry B. Wilbur, M.D., Syracuse, N. Y.; "Interval Hydrocephalus," by H. M. Knight, M.D., Lakeville, Conn.; "Juvenile Insanity," by Isaac N. Keslin, M.D., Media, Penn., and a summary of the "Status of the Work before the People and Legislatures"—all showing, more or less, the relation of preventable causes to idiocy and the necessity of more devotion on the part of the public authorities, as well as the people generally, to means of removal—Isaac N. Keslin, M.D., Media, Penn., Secretary of the Association.

Transactions of Medical Society of Pennsylvania, thirteenth annual session, held in Chester, May, 1879, Vol. XII., Part II., pp. 480, contains nineteen reports from County Societies; twelve other reports and papers of a practical character on various subjects in the different branches of medicine and surgery, and four addresses. (1) By the President, I. L. Stewart, M.D., on the Lives and Characters of some of the Learned and Distinguished Gentlemen who in years past presided over the Society; (2) on Surgery—the Treatment of Wounds, by Chas. T. Hunter, M.D.; (3) on Medicine—Emotional Fever, by Andrew Fleming, M.D., and (4) Hygiene, by Richard A. Cleeman, M.D. This last comprehends a brief notice of the subject of State Medicine in general, its recent signal advances both at home and abroad; and in particular, the energetic action of the Sanitary Council of the Mississippi Valley Association for the restraint of yellow fever, and the establishment of a National Board of Health.

The Utica Board of Health report for 1879, Dr. James G. Hunt, Health Officer, shows the good results of careful sanitation Total number of deaths for the year, 444, which, on an estimated population of 35,000, gives an annual ratio of 12.68 per 1,000. "This year the number of deaths from diphtheria is only 5, while the number in 1878 was 24, and in 1877, 42. This goes to show that the more thoroughly the sanitary laws are complied with, the death-rate for diphtheria, as well as all other contagious diseases, cannot but be

greatly lessened." The chief causes of death were: Consumption, 63; cholera infantum, 22; heart diseases, 23; convulsions, 16; unknown, 21; insanity, 48—by deducting these (being asylum cases, we suppose, and from different parts of the State) the death-rate for the year was only 11.31. Lucid summaries of the dangers of a filthy soil, and of using polluted water and adulterated food, are appended. These render the report instructive for the people, and promotive of sanitation.

Arkansas State Medical Society Transactions, 1879, pp. 93, almost wholly consists of brief reports and cases, and interesting practical discussions thereon. E. Bentley, M.D., U. S. Army, briefly urges the germ theory, and air and water as the great fields of inquiry in the progress of preventive medicine. D. A. Linthicum, M.D., of the Committee on State Board of Health, reports upon the fruitless efforts of the Committee to secure needed legislation, and the apathy of people generally, not excepting physicians, to the means of promoting health by acts of omission as well as commission in persistent negligence and tolerance of household habits and unsanitary surroundings.

Tennessee Medical Society Transactions, 1879, pp. 213. "Thoughts culled from the fields of Medical Literature," Address of R. F. Evans, M.D., President; "Sanitary Medicine," Frank A. Ramsey, M.D.; "Uses and Abuses of Alcohol," T. A. Atchison, M.D.; "Etiology of Malarial Diseases," J. W. Penn, M.D.; "Use and Abuse of Eyes in School," Van S. Lindsley, M.D.; "Inherited Syphilis," J. R. Buist, M.D., and four papers on "Yellow Fever," respectively, by G. B. Thomton, M.D.; W. T. Hope, M.D.; G. A. Baxter, M.D., and E. M. Wight, M.D. These ten papers take up about half the volume, and find their chief interest and strength in the advance of and questions in Preventive Medicines, and, taken together, show an interest in this direction well deserving of emulation by other State societies. "Fractures of the Femur," by C. S. Briggs, M.D.; "Ovaritomy," Thos. Tipscomb, M.D.; "Treatment of Urethral Strictures," J. B. Murfree, M.D., and "Report of Committee on Tumor," S. P. Cutler, M.D., are contributions of practical benefit to all practitioners. The concluding paper (excepting the Constitution and Code of Ethics) is an admirable tribute to the Roll of Honor—to a Memoir of TWENTY-ONE noble souls who sacrificed their lives in contending with a disease which it is in the power of the people to wholly prevent!

Virginia Medical Society Transactions, October 21—23, 1879, are published as usual in the *Virginia Medical Monthly* (January number), being Part I.—commencing Vol. III., pp. 151. The

opening address, by the President, Prof. L. S. Joynes, A.M., M.D., LL.D., is chiefly devoted to the necessity of professional union as the primary and most effectual means of promoting improvement and securing the respect of the community and of the law-makers. Most of all, is this urged in behalf of the great sanitary movement, to the furtherance of which physicians, as guardians of private and public health, are bound by the highest obligations of duty. The common mistake of attributing professional advancement almost exclusively to city physicians is dwelt upon, and many prominent examples of the foremost leaders, both ancient and modern, are cited to the contrary. The alleged proverbial disagreement among doctors is scorned, as it should be, in comparison with the diversities among theologians, lawyers, politicians and editors. Next follows the annual address, by Oscar Wiley, M.D., on *Reflex Influence on the Physician of the Work of Healing—Of the Work upon the Workman*, which dwells upon the softening influences of familiarity with suffering upon human character and the ennobling influence of administrations among the poor, of which the world knows nothing and usually takes no cognizance. *Advances in Hygiene and Public Health* are made the special subject of a classified report in the working plan of the Society, Samuel K. Jackson, M.D., reporter. The event of the year, the creation of a National Board of Health, is but casually noticed for omitting carbolic acid from its list of disinfectants. "The committee to investigate and report upon the history, origin and cause of yellow fever" is dismissed with a single paragraph, because, apparently, "Our National Legislature, for want of a proper appreciation of the exigency they were called upon to meet, failed to appoint on this Commission such investigators as were needed." *The* needed qualifications were, how to discover the *cause* of the infection—the *unknown*. And from this, under the subhead of *fermentation*, the prophecy of an "eminent German pathologist," whose name is not given, is quoted "that, before long, all infective diseases will be classified according to the botanical germs and species of the organisms which have occasioned them." Well, that may be so, but at present it hardly seems justifiable that we should make no other researches, no other efforts to stay the progress of epidemics until that great need shall appear. Disinfectants are summarized, many useless ones, but nothing new. Chemistry, Pharmacy, Materia Medica and Therapeutics are reported upon by E. T. Robinson, M.D.; Obstetrics and Diseases of Women and Children, by G. B. Jennings, M.D.; Practice of Medicine, by Wm. H. Bramblet, M.D. H. P. C. Wilson read a paper on *Paquelin's Thermo-Cautery, with Wilson's Antithermic Shield, in Epithelioma of the Cervix-uteri*. Dr. J. M. Toner gave by invitation a *Sketch of the Life and*

Character of Dr. James Craik, of Alexandria, Va., friend and physician of General Washington, and Surgeon-General of the Continental Army of the Revolution. J. Marion Sims, M.D., gave by invitation a paper on *Diagnosis of Abscess of the Liver by Symptoms of Cerebral Hyperemia, with some Remarks on Treatment of Hepatic Abscess by Aspiration.* A. M. Fauntleroy, M.D., reported thirty-three cases of *Diphtheria.* William Selden, M.D., reported the autopsy of a case of *Bony Union of Intra-Capsular Fracture of Neck of Femur.*

The South Carolina Medical Association.—Transactions for 1879 (pamphlet, pp. 85), contains an animated discussion on "Euthanasia," the subject of a committee report, Dr. J. F. M. Geddings, chairman. The chairman himself expressed himself as being somewhat doubtful of the propriety of endorsing the practice, while he confessed to it in at least one case under his care. Dr. T. T. Robertson energetically espoused the practice as being certain, sooner or later, to be accepted as surely as the doctrine of evolution, and that would be as surely as the Copernican system in astronomy. Dr. Buist thought it should be discussed privately; that nothing of the discussion ought to be published, as it would be likely to give rise to wrong opinions. Dr. Wilhite and others opposed the practice in toto, and Dr. Prioleau agreed with the law, "that he who shortens life takes life," and denounced the practice in every point of view. The committee was continued for another year. Dr. T. G. Simons reported brief observations on the yellow fever epidemic in the southwest in 1878, dwelling especially on the fatal effects of panic and the lack of organized authority. Of second attacks, Dr. Simons' experience is in accord with most others who have had much, that they are exceedingly rare, and only among those whose first attack was incomplete. Dr. P. E. Griffin urged the attention of the Association to more care in the certification of insanity, and dwelt upon the decidedly careless manner by which asylums for the insane are crowded with imbeciles, drunkards and epileptics, to the exclusion of acute and curable cases of insanity. The other papers are wholly devoted to subjects of treatment: Dermatoid Cyst removed by Ovariotomy, by Dr. B. W. Taylor; Management of Retained Secundines in Abortion, Dr. S. Baruch; Reposition of Complete Inversion of the Uterus, Dr. F. F. Gary; Sloughing of the Vagina, Dr. F. Peyre Porcher; and Compilation of 131 Cases of Stone in the Bladder, Dr. Frances L. Parker. The Association was, in the absence of the President, Dr. S. S. Marshall, presided over by the First Vice-President, Dr. F. L. Parker.

Common Mind Troubles and the **Secret of a Clear Head*** is an excellent book, written for popular instruction by an eminent London physician, whose specialty is diseases of the mind. It is divided into two parts. The first treats of those mind troubles which are most frequent, and the common sources of unhappiness, and sometimes the forerunners and warnings of insanity; how they may be resisted, and eventually prevented. The second part contains the precepts for acquiring and keeping a clear head and a happy spirit. The author being a thorough student of mental physiology, and a believer in the power of Reason and Will, gives valuable instruction for self-government, without any humdrum repetition of threadbare moral maxims. It is a decidedly wholesome book, which will well repay every attentive reader.

Quarterly Epitome of Practical Medicine and Surgery, being an American Supplement to Braithwaite's Retrospect —of which we have received Part I, March,—is an admirable beginning of a promise made by the publisher, several years ago, to publish an epitome of American medical journal literature, on the same standard, and of the same relation to it, as Braithwaite's Retrospect is to English. It consists of 160 closely printed pages, after the same size and style as the Retrospect, including a quarterly summary of medical news and book notices, of nearly two hundred medical journals—good, bad and indifferent—published in the United States. We have in this Epitome a selection of the freshest and best items. It is edited by W. S. Wells, M.D., editor of the admirable Epitome of Braithwaite's Retrospect, which, taken in conjunction with the well-known energy of the publisher, is a sufficient guaranty of the continued excellence of the work. $2.50 per annum in advance; with the Retrospect, $4.50. New York: W. A. Townsend.

American Health Primers, edited by W. W. Keen, M.D., Fellow of the College of Physicians of Philadelphia, Surgeon to St. Mary's Hospital, etc.:

I. Hearing, and How to Keep It. With Illustrations. By Chas. H. Burnett, M.D., of Philadelphia, Aurist to the Presbyterian Hospital, etc.

II. Long Life, and How to Reach It. By J. G. Richardson, M.D., of Philadelphia, Professor of Hygiene in the University of Pennsylvania, etc.

III. The Summer and Its Diseases. By James C. Wilson, M.D., of Philadelphia, Lecturer on Physical Diagnosis in Jefferson Medical College, etc.

* By J. Mortimer Granville, M.D., F.R.C.S., London: 12mo., pp. 185. Price $1.00. Philadelphia: D. G. Brinton.

IV. Eyesight, and How to Care for it. With Illustrations. By George C. Harlan, M.D., of Philadelphia, Surgeon to the Wills (Eye) Hospital.

V. The Throat and the Voice. With Illustrations. By J. Solis Cohen, M.D., of Philadelphia, Lecturer on Diseases of the Throat in Jefferson Medical College.

VI. The Winter and Its Dangers. By Hamilton Osgood, M.D., of Boston, Editorial Staff Boston *Medical and Surgical Journal.*

VII. The Mouth and the Teeth. With Illustrations. By J. W. White, M.D., D.D.S., of Philadelphia, Editor of the *Dental Cosmos.*

VIII. Brain Work and Overwork. By H. C. Wood, Jr., M.D., of Philadelphia, Clinical Professor of Nervous Diseases in the University of Pennsylvania, etc. Just ready.

IX. Our Homes. With Illustrations. By Henry Hartshorne, M.D., of Philadelphia, formerly Professor of Hygiene in the University of Pennsylvania. Ready March 1st.

X. The Skin in Health and Disease. By L. D. Bulkley, M.D., of New York, Physician to the Skin Department of the Demilt Dispensary and of the New York Hospital. Nearly ready.

XI. Sea Air and Sea Bathing. By John H. Packard, M.D., of Philadelphia, Surgeon to the Episcopal Hospital. Preparing.

XII. School and Industrial Hygiene. By D. F. Lincoln, M.D., of Boston, Mass., Chairman Department of Health, American Social Science Association.

This admirable series of little books, for the most part adapted to the comprehension of non-professional readers, is now nearly complete. We have received all but VII. and X., and it affords us pleasure to state that the gratification which we expressed on the publisher's announcement a year ago has been fully justified in the result. Taken altogether, it is a diamond library of sanitary knowledge which should adorn the table of handy books in every household. There are a few exceptions in some of them, but these exceptions can easily be overcome, as they carry with them the suggestion: If in doubt consult a physician—the physician who will take most interest in giving advice on the best means of preserving health, the object of these books, and to which they are an admirable contribution. 50 cents a volume. Philadelphia: Presley Blakiston.

Publications Received.—Buck's Hygiene and Health—William Wood & Co.; Dunglison's Practitioner's Reference Book—Lindsay & Blakiston; Hale's Management of Children—Presley Blakiston; Hart's Truth about Vaccination—Smith, Elder & Co.; Kraus' Carlsbad and its Natural Healing Agents—Trubner & Co.; Wilson's Healthy Homes—Presley Blakiston; Trouseau's Therapeutics, Vol. I.—Wm. Wood & Co.

THE SANITARIAN.

A MONTHLY MAGAZINE.

Vol. VIII. AUGUST, 1880. No. 89.

A PLEA FOR SOUND MANHOOD AND WOMANHOOD.

By RICHARD MCSHERRY, M.D., Professor of Principles and Practice of Medicine, University of Maryland.

An interesting little story has just been published under the significant title of *Homo Sum*. Every man and woman living is rightfully homo, and yet how few who fill the measure as it should be! Who and what is homo? According to the novelist, he has the attributes of divinity. Every creature hath his proper gifts, as the lion his courage, the elephant his strength, the dove her gentleness; but man, homo, has all the gifts of all animals—courage, strength, cunning, ferocity, and gentleness, too, with others unknown in the lower scale of being, which separate him therefrom by an ever impassable gulf, we must believe, even if to the offense of Mr. Darwin and his followers. It is that wonderful many-sidedness of his inner life, says the author of *Homo Sum*, and of its outward manifestation, which assigns to man his superiority over all other animated creatures.

As man is many-sided with his divine, his human and his animal nature, he needs many-sided development. Medicine, or a great branch thereof, hygiene, reaches not up, or but very incidentally, to the divine element in humanity, but it takes a part, *magnam partem*, in everything pertaining to every portion of his career manifest to our intelligence.

Medicine, in its most comprehensive sense, enters into every phase and stage of human existence. It begins not with birth, but before, the very *homunculus* coming under its scrutiny and care; and the dead body, the poor cadaver, now ready to resolve into the primitive elements which compose it, is made to give an account of its constituents, and of what was well or ill with it, for the benefit of all the living. It is strange, by the way, that any law-givers of the nineteenth century should be so benighted as to make dissection a criminal offense. Is the anatomist torturing the dead, or is he amusing himself, when, with scalpel and microscope, he works for weary hours, by day and by night, investigating the normal structure of his brother

man or tracing the ravages of disease? For whose benefit is this very repugnant work? Not for his own, surely, but for that of all the human race. The stupidity that would obstruct his work is almost criminal.

How is the man, homo, to be properly developed? By education. And what is education? When properly directed, it is the bringing into light and to use his innate faculties of mind and body. The sound mind in the sound body is (*medicus loquitur*) the great desideratum. Among rude and barbarous nations physical force reigns; among the enlightened, intellectual power is supreme. But the barbarian often finds himself overthrown by inferior physical force, coupled with superior intelligence, while, *per contra*, brute force sometimes carries the day over wisdom.

Why cannot men be both strong and wise? They can, and they ought to be, if properly educated. The hygeist may have something to say against intellectual education, as generally conducted, but he has more to say against the neglect, among the educated classes, of physical culture. We are in danger of a national mistake in supposing that the intellectual faculties are to be developed at the expense of all others. The pursuit of happiness is one of our national privileges, but happiness will never be found in any maturity of scholarship when the acquisition has ruined the health.

That health is often sacrificed at the shrine of intellectual ambition is a matter of common observation among physicians. We all see it, not only occasionally, but habitually. The writer sees it, especially in the female sex, almost daily. It is true, the whole apparent damage is not due to mere study, but to study with some concomitant evils. Lessons by day and studies by night; the crowded schoolroom; the over-heating or the chilling by unequal draughts; mental tension to weariness, and muscular inaction to weariness and weakness also, are among the factors of the technical "Diseases of Women." The growing girl sitting so long at her desk finds in time that she has spinal curvature. The dorsal muscles, all unused, are inadequate to keep the spine erect; and their defect is (attempted to be) corrected by elaborate apparatus which not unfrequently does a great deal of harm by pressure which reaches to the pelvic organs.

Thus the girl is injured. When she becomes a married woman the erector spinal muscle, with its accessories, is unequal to its necessary counterbalancing function, and the mother, that is to be, throws herself languidly on bed or sofa for the only relief she knows. The perpetual pain in the back with which she always suffers, she looks upon hopelessly, not as acquired, but as natural to her sex and condition.

Will acquaintance with all the "ologies" make such a woman happy and make her a fit helpmeet for her husband, or a competent mother of a family, or, in short, the "ministering angel" of a happy home? Ask her, gently and civilly, and mark her answer.

If the writer earnestly urges less brain work and more physical among the rising generation of women, it is not that he would not have the sex beautifully and becomingly educated as befits it. It is of national importance that we have healthy women. But with the present system in vogue, of perpetual studies, cramming at schools,

mental indigestion as well as gastric, competitive examinations, searching for abstruse knowledge, and utterly ignoring that which tends to domestic economy and domestic comfort, we have nothing to look forward to but broken health in women, and the bartering of the comforts of home for the mess of pottage at hotel or boarding-house. Then gynecology comes inevitably to the front as the leading branch of practical medicine in America.

We must hope for better things, and physicians, hygeists and *sanitarians* (at least all of us who are not hostile to the sex), must work unitedly and persistently for their emancipation, and what we consider *Women's Rights*, not the least of which are the roseate tints of health.

Boys being less restrained by conventionalities than girls, are harder to repress, and they will have some muscular exercise, with or without permission, but it ought to be systematized. At military schools this is done more or less scientifically; at other schools, for the most part, it is a matter of taste with the scholars, some going to excess in mental and some in physical exercises.

A recent article on *Physical Culture* in the *New England Journal of Education*, from the pen of Prof. E. Hitchcock, of Amherst College, shows that due regard is paid to this subject at that famous centre of learning. The Professor takes as a portion of his text the following passage from Dr. Letheby:

"The political influence of a nation is as much dependent on the muscular strength of the people as upon their intelligence and commercial activity."

We often see men of intellectual ability going through life without making their mark, simply for want of physical force. They are wearied too easily to enter with due vigor into the stirring contests of human life. They are indeed often delicate by inheritance, but the delicacy has been fostered by physical inertia. A general remark made by Prof. Hitchcock applies to such as these in early life, especially. "It is of prime importance," he says, "that we secure muscular, bodily or physical exercise for young and growing minds and bodies. And perhaps the first requisite for this culture is, that this exercise be regular—regular in time and regular in quantity, save a proper increase with age, strength, vigor and length of practice. Even regularity, with defect in some requisites, is less injurious than irregularity with perfection of functions in many other requisites. For the greater part of the organic functions of the body, such as breathing, heart-beat, and movements of the stomach and intestines, are rhythmical. And men who work horses and cattle know how they can work them *regularly with overwork*, with less harm to the animals, than to employ them severely hard at a short period and then allow them too much rest at another."

The Professor observes that the morning is the best time for exercise, "but to schools also this is the very best time for mental work, and most usages of society require the morning hours for occupation and business; so that it is a difficult time to give for exercise in most of our schools."

But in fact the morning may be given to business, or to schools and still allow short and sufficient terms for physical exercise. A

the University of Maryland we have a recess of a few minutes between lectures.

Now *five minutes* of pretty brisk exercise on the bars, or with dumb bells, or in any other moderate way, repeated several times during the morning, will have a wonderfully good effect in promoting full respiration, purifying the blood, and in nourishing the muscular system. The writer often picks up a chair, or any other moderate weight at hand, and after five minutes' play therewith, over the head or otherwise, can feel that the muscles of the arm have, in that short time, secured an extra supply of blood, which tends at once to nourish them, and to diffuse and equalize the circulation.

A good muscular system has numerous advantages. In the first place it inspires respect. But, moreover, it has many subjective advantages. Well-developed pectorals protect the chest, with its important organs, the heart and the lungs. Good dorsal muscles keep the spine erect, and scarcely admit of backache.

The arts of war and the arts of peace require vigorous muscular force; and in domestic matters the fine lady often finds things put wrong, instead of to rights, by a strong but ignorant servant woman, and herself unable to accomplish her own will for want of such strength as an adult woman ought to have. We are not entering any plea for athletes, bruisers or boxers; and a female Hercules, such as one may see at the circus, is nothing more nor less than *monstrum horrendum;* such as these are not what the hygiest calls for in the interests of society; we only ask for healthy men and women, who require to be such, a fair amount of physical as well as of intellectual force.

We want physical reasonably interblended with mental culture. We want respite from overwork in either, and the prevailing danger is of mental overstrain. We have seen pupils fearfully injured by sitting still for hours at books, and the same may be said of clerks, teachers, and others, and getting insidiously chilled by the blood leaving the surface to fall upon, and, mayhap, congest the centres. Now, in such cases, brief terms of active exercise would take the load of blood from the viscera, and send it, giving wholesome, vital warmth, to the suffering surface, while relieving the centres. Here we have a form of combustion of tissues which warms us more favorably than the combustion of coal in furnace or stove.

When young men feel chilly, instead of warming up by the best process—by the use of dumb-bells, axe or saw—they often resort to dangerous stimulants, which are always at hand, and which always increase the evil.

"It is like a draught of fire," said Prince Henry, before the Indians called it fire-water, as the tempter handed him the flask with its limpid wavelets, saying that Geber had

> "Discovered
> The secret that so long had hovered
> Upon the misty verge of truth—
> The Elixir of Perpetual Youth,
> Called *Alcohol* in the Arab speech!"
>
> * * * * *
>
> "But woe!" said the angel,
> "This fearful curse

Shakes the great universe."
* * * "Beware! oh, beware!
For sickness, sorrow and care,
All are there!"

And fire or fuel, as it appears to be, the man who warms his blood with it is soon suffering with more external chill and internal congestion. Such congestions, repeated or prolonged, easily lead to inflammation; and such inflammation, in delicate subjects, to catarrhal or caseous pneumonia, which is, presently or prospectively, the most common form of consumption.

The best counteracting influence to such congestions is active physical exertion, preferably in the open air when the conditions are favorable.

Alcohol, aqua vitæ, or the Water of Life, as the evil one falsely called it, so far from giving strength or permanent warmth, after a deceptive flash, impairs muscular strength and lowers animal temperature, so that it proves to be, here as elsewhere, a delusion and a snare.

For good, sound men and women, then, let us have moderate labor of mind and body, tempered with recreation and rest. Let the faculties be exercised with judicious uniformity, and let physicians and THE SANITARIAN insist and urge, until the public gives due attention to the matter, that education, so-called, shall be regulated by, or even subordinated to, rational rules for the physical welfare of the ever increasing millions of our fellow-citizens.

Baltimore, June, 1880.

———o———

"Common" Schools in Brooklyn.—It is somewhat staggering to the pride of New England, as the great representative of the common school, that the third city in the Union—Brooklyn, N. Y.—perhaps more than any other out of New England under Yankee influence, the home of Beecher and Stowe and Putnam, should have the most inefficient system of common schools of any first-class "metropolis" in the Northern States. The trouble seems to be an outbreak of old English class pride among these New England folk, which keeps the Yankee aristocracy on the academical, and "the common people" on the free school side of the educational highway. Only within the past two or three years has a free English high school been sprouted, against the steady opposition of the numerous private academies. It is refreshing to hear that the recognized leader in public school affairs in Brooklyn is a broad-minded, Catholic Irishman. When the eminent sons and daughters of New England forget the common school, the Republic will be at no loss to find substitutes from any one of a dozen nationalities welcomed to its broad domain. On the whole, it is better, in school matters, to be a roundabout American citizen than a "Boston man" belittled with some petty new "notion" of education that old Captain Miles Standish would have sent "kiting" after the ghost of King Philip, of Pokanoket.—*New England Journal of Education.*

THE MICHIGAN SANITARY CONVENTION.

Detroit, January 7–8, 1880. Abstract of Proceedings Concluded.

SCHOOL HYGIENE.

Prof. J. M. B. Sill, Superintendent of the Public Schools of Detroit read a paper on School Hygiene, being something in the nature of a direct reply to Dr. Lundy's paper, on the "Effects of School Life on Vision."* The main features of Prof. Sill's paper are as follows:

The subject seems to present itself in two aspects. First, and perhaps foremost in importance at the present time, the indirect effects of school work and school discipline upon the general physical well being of children. The first department of the subject has to do not with school houses, but with schools as such.

The second department deals with the direct sanitary conditions of the schools, especially including the topics specified above as excluded from the first department.

First, then, as to school discipline and management, I ask this question: Is there not danger to the health of pupils in the vigor of the effort sometimes made by school authorities to secure high per cents. of attendance? I am of the opinion that the exactions of the schools in this respect are sometimes excessive and hurtful to the health of pupils. I do not underestimate the value of prompt and regular attendance on the part of the pupils. I am well aware, from long observation and experience, that the loss through non-attendance can by no means be estimated upon the basis of the hours and days of absence, and that the evils of irregularity are far-reaching, and, when it is excessive, destructive of progress and ruinous to scholarship. But it is quite possible to have too much of a good thing; to lay such stress and emphasis upon constant attendance, to so visit delinquencies in this respect with direct or indirect punishment, and to excite emulation and rivalry between pupils and between different schools, that children will be at school when they ought by all means to be at home. A few of the better and more ambitious pupils need restraint, rather than urging, in this respect, and girls especially, who are, on the whole, more generally faithful than boys to school duties, spurred on by pride in a perfect attendance record, and by hope of approbation or fear of reproof by their teachers, will often overbear the counsels of a prudent mother, who knows better than they can know that there are times when over-exertion and exposure are dangerous and may imperil health, happiness and usefulness for a lifetime.

It is important to the health of children attending our schools that they be happy and contented in their work. Whatever depresses and unnecessarily restrains the natural buoyancy of spirit is injurious and in the end dangerous. The body cannot long remain healthful if it be the dwelling-place of a perturbed, irritated and unrestful spirit. A child constantly repressed and annoyed, thwarted in all

* The Sanitarian p. 163, Current Series.

impulses of childhood, in chronic rebellion against an unnatural and unwise discipline, not founded on sense or justice, but prevailing to some extent even at the present day, not only grows petulant and irascible, but, through the deep sympathy that exists between mind and body, suffers physically as well. I confidently avow my belief that the true school manager is born, not made by circumstances or by training.

The remedy is difficult of application, but a long step in the right direction will be taken when school committees and the public generally shall recognize the fact that something more than knowledge is required to make an efficient teacher, and when, acting in consonance with this recognition, the best means should be taken in the examination of candidates for positions in the schools, to test not only for thorough and competent scholarship, but also for those higher qualities of mind and heart, that tact, good sense, sympathy and inborn leadership, compared with which mere academic attainments are common and almost valueless. The results of such efforts must, however, in the nature of the case, be fallible, but if they are supplemented by sending adrift as failures those who in actual practice and after fair trial are found to maintain authority by mere force and energy of muscle, whose little empires are in perennial rebellion and whose subjects are full of wasting and unending heart-burnings, the desired end will nearly if not actually be reached.

To a small minority of pupils there is also another danger, that of over-work and over-anxiety—to those who are exceptionally ambitious and conscientious in the performance of their duty, and the danger to such is greatly increased when to these characteristics is added extraordinary sensitiveness to the approbation or displeasure of the teacher. Such pupils need to be tenderly watched and carefully guarded. A great responsibility rests upon the teachers in whose charge they are placed, as well as upon the parents whom God has made their natural guardians and protectors. They need kind and constant restraint as to the amount of work which they incline to do. Even approaches to failure in the school work should be overlooked, and the keen mortification which is sure to follow should be modified and made easy to bear.

I believe that the schools are progressing in the right direction, and that, as the years roll by, we shall hear of and see less and less of nervous irritability and prostration, and their train of attendant and consequent evils, among the children who pursue their studies in the public schools.

As to school architecture and the location of school buildings, there is substantial argument among all who have devoted time and thought to the subject. No one disputes the desirability of spacious grounds, of open space permitting the access of air, the necessity of perfect ventilation, thorough drainage and an abundant supply of light, but upon details and the proper methods of securing all these advantages much remains to be learned, settled and formulated.

Let me call attention for a moment or two to some of the many and frequently conflicting conditions that often require to be met and harmonized. For instance, the value of ample play grounds, the necessity for pure air and abundant light, point to sparsely settled re-

gions where land may be had at reasonable prices, where atmosphere is untainted, and the light undimmed by smoke and unimpeded by the walls of lofty buildings, as proper location for schools, but on the contrary, unbending necessity often demands that they be established in the most densely populated portions of our great cities, where it is impossible to secure even tolerable hygienic conditions.

Many intelligent citizens and enlightened physicians justly complain of the injury brought about by the excessive amount of stair-climbing made necessary by the height of school buildings. Of course where sufficient ground is obtainable there is no adequate excuse for third and fourth stories. But sufficient ground is not always obtainable, and then the choice is between lofty buildings or buildings inadequate to the wants of the district in which they are located. In such cases let the attempt be made to mitigate the injury of stair-climbing by reducing the height of the stories, and you are met by difficulties in ventilation and in the admission of the necessary amount of light.

Again, architectural effect must not be wholly ignored; public buildings ought to be models of good taste and proper proportion, and people will decline to be taxed for the erection of architectural monstrosities, even if they serve practically the purpose for which they were intended.

Yesterday a suggestion was made that every school-room should be oblong and lighted by means of windows in the longer sides. Lighting by means of windows on both sides of such rooms means, of course, outside walls on both sides, else the windows on one side would be useless. This would be quite practical in the case of the buildings containing two or even four rooms. But please conceive of the amount of territory that a twelve-room building, erected on this attenuated plan, would straggle over, of its enormously increased cost, and of the amazing architectural effect of such a structure.

'Practically I have found that light should be admitted from two sides of school-rooms. In clear days, when the direct rays of the sun fall upon the windows of one side, it becomes necessary to protect pupils and teachers by means of proper shades, capable of excluding some of the light. This leaves the windows of the other open side free for the ingress of all the light they are capable of admitting. In nearly all the rooms of the more modern school buildings in this city light is admitted from the rear of the room and from the right or left hand side of the pupils as they sit at study. Unquestionably pupils should not sit facing the light, but if this condition be carefully observed and the quantity of light be abundant, I do not regard the direction from which the light comes, whether from the right hand or the left, of vital importance. The chief objection to the admission of light from the rear of a room is that the teacher is usually so seated as to face it. She has, however, much greater latitude in movement than can be conveniently granted pupils, and is usually able in this way to ward off any bad effect. In some schools the seats are so arranged that the teacher sits behind the pupils, and with them faces the unlighted side of the room.

At all events, if light is to be introduced from two directions, which seems to be essential, either pupils in large buildings must face the

light (which is not to be thought of) or light must be admitted from the rear, for it will be found impracticable to construct a building of considerable capacity in such a way that window space can be had on opposite sides.

As to the coloring used upon walls, I have found tints nearly neutral, but containing a predominant suggestion of yellow, most agreeable and restful to the eye. In the coloring of wainscoting and inside woodwork generally, the yellowish tinge commonly used as a ground for oak graining seems to be well adapted to the reflection of a large amount of light without wearying or irritating the eye. Ceilings, I believe, should be white.

Shades should be of neutral tints, sufficiently heavy to soften the glare of intense light, while they at the same time admit the larger portion of it.

As to the necessary amount of light and the proportion of window space to floor, all the discussions I have heard on this point leave me in doubt. It appears that there is such a thing as having too much light. In a neighboring city in this State a school-room, 37x51 feet in size, and lighted by eight windows, five of them on the left and three in the rear of the room, was found to be excessively lighted, and it became necessary, for the comfort and safety of the pupils, to change the light-colored shades for others darker and more opaque. Here was a case where the pupils did not face the light, and where the longer row of windows were on the left side, and yet with a proportion of window space amounting to only twenty-two per cent. of the floor, it was necessary to darken the rooms considerably. In a room where the percentage of window space to floor is not more than fourteen or fifteen, I can, in a dull and cloudy day, read the finest print in the corner of the room most unfavorably situated for the purpose, without effort, and without bringing the page nearer to the eye than the normal distance. Is not this a fair test, and if so, is more light needed, or even desirable?

In reference to myopia and kindred ills, I suspect that, under the most favorable conditions of school life and of home life, these diseases will not entirely disappear, but persist to plague humanity in the future as they have in the past. We must pay something for our constantly increasing enlightenment, and so long as the eye is the main medium through which knowledge is acquired, those nations that make great attainments must win their honors at some expense to the wonderful and delicate organ chiefly concerned in the accomplishment of their triumphs.

"COSMETICS"

Was the title of a paper read by Dr. C. C. Yemans, and the many ladies present settled themselves to hear something interesting as it was announced.

With the æsthetics of his subject the doctor said he had nothing to do. Cosmetics may include surgical operation to remove defects, and certain drugs were taken for cosmetic effects only, as arsenic to cause pallor, belladonna for dilating the pupil, which is also supposed to give one an intellectual appearance. These were dangerous in

many ways, but they did not come within the scope of his theme. Cosmetics are those simples or compounds applied either to the skin or upon the hair, commonly classed as washes or dyes. While I cannot write of æsthetics here, I wish to guard myself by indorsing all proper methods for causing one to be attractive and even admired. Cosmetics, under my definition, will also include powders and washes for the teeth. Much unhealthfulness arises in the promiscuous use of cosmetics. In this State we can scarcely write of any hurtful thing without antagonizing some private enterprise. Any person in Michigan is qualified to practice medicine. It is the paradise of charlatans and pretenders. The application of this to my theme is apparent. Lotions, powders, dyes—of the composition of which we are quite ignorant—are sold which are dangerous in the extreme, producing sickness and insanity, perhaps death. Cosmetics have ever been used to please the fancy, and will be, I suppose, without regard to harmfulness. The women of the forest, and men as well, have more striking colors, but less harmful compound than adorn the visage in modern parlors.

The skin is a curiously complex envelope, having important parts and functions. The skin is a natural outlet for certain excreta, insensible perspiration. The skin has also the function of absorbing. Young infants are so fed, and life sustained. Now, medication is not the objection in the use of cosmetics, yet, at the same time, if they contain drugs readily absorbed and harmful, one may have all the injurious results.

Hair dyes are especially harmful, in causing paralysis or insanity. Washes and powders for the face—as lily white, magnolia balm and others—are hurtful in many ways, and when they contain mercury, lead or arsenic, they often cause death. In small and frequently repeated doses they cause paralysis. Examples of insanity and paralysis are not infrequent.

Not long since a woman consulted me who had no control of her hands, all from a face-wash which is daily sold in large quantities in this city.

Protection should be afforded by some wholesome enactment regarding the sale of hurtful drugs. There are harmless cosmetics which increase the beauty and do not harm the skin. These should be used.

ADULTERATION OF FOOD.

The Secretary, Dr. C. C. Yemans, filed a paper prepared by Karl Jungk, Ph.D., Professor of Chemistry in the Michigan College of Medicine, on the "Adulteration of Food." The paper begins with a reference to the anti-adulteration laws of England, passed in 1862, 1872 and 1874. The writer declares that the good arising from the pursuit of his work (investigating adulterations) is immeasurable, particularly to the branch of chemistry, which had thus far displayed but little activity in this branch of research. The Government analysts in England have formed themselves into a society for the furtherance of their interests, and the first task assumed by that body was to settle definitely what constitutes an adulteration. They decided that an article is to be regarded as adulterated, the subject being an article of food or drink:

1. When it contains ingredients deleterious to the health of the consumer.

2. When it contains a substance which increases its weight, volume, or apparent strength, or lends it a fictitious value—exception being made when it is necessarily conditioned by the production or collection of the ware or needed for its preservation, or where its presence is specified when sold to the consumer.

3. When the article contains little or none of the main ingredients alleged to be present.

4. When the article is an imitation, or vended under the name of other wares.

In case the subject is a drug or medicine:

1. When it is sold for medicinal use under a name official in the British Pharmacopœia and deficient in strength and purity as compared with the standard adopted in this work.

2. When it is sold under a name not covered by the British Pharmacopœia, and possesses a materially different composition from the one attributed by recognized works of authority on pharmæognosie.

Milk must not contain less than nine per cent. by weight of solid constituents besides the fat, and not less than two and one-half per cent. of butter.

Skimmed milk must not contain less than nine per cent. by weight of solid constituents besides the fat present.

Butter must not contain less than eighty per cent. of pure fat.

Tea must not contain less than eight per cent. of mineral ingredients, and of these three parts must be soluble in water. Tea, in the condition in which it is sold, should yield at least thirty per cent. of dry extractive matter.

Cocoa must contain at least twenty per cent. of cocoa butter.

Vinegar must not contain less than three per cent. anhydrous acetic acid.

This proceeding of the British Government soon found ready following in Germany and France, and has everywhere been attended with beneficial results.

The writer goes on to show that to the practiced scientist the most difficult problems in this field must finally yield a solution, and that the analytical determination of food will soon be robbed of its difficulties and be on as secure a footing as the analysis of minerals.

Another prominent article of consumption is milk, whose purity is of special importance in its application to the feeding of children. Occasionally milk has been found to contain arsenic, mercury and lead. Often these agents have been administered to the cow either as internal or external remedies. The adulteration of milk with water is of such common occurrence that in the larger cities of this country the health boards devote special attention to the examination of this fluid, with the design of detecting and punishing offenders who engage in this business. The examination of milk is usually performed by a determination of its specific gravity—1,028 to 1,032—or else by means of instruments which involve the principle of color comparison. Cream can be assayed by means of the same instruments. The addition of salt heightens both the specific gravity and the fluor, while starch is another frequent addition.

If we assume that the consumption of fresh milk averages 120 quarts per capita per annum, this would amount to 12,000,000 quarts for a city of 100,000 inhabitants. The value of this at six cents per quart would amount to $720,000. Were this milk adulterated with only ten per cent. of water, it would represent a sum of $72,000 paid for this needless adulteration. Bearing in view that milk has often been found adulterated with equal parts of water, it might appear that large sums have been paid unwittingly in this manner.

The paper also treated of the hideous adulterations of beer, in which beverage are sometimes found such deadly poisons as strychnia. The adulteration of beer has increased greatly within a few years, and certain Englishmen, claiming to speak with authority, say that but one gallon of beer in twenty now made in Britain is free from adulteration.

Vinegar has been adulterated with a variety of substances, principally to increase its sharpness. Creosote is sometimes used to prevent moulding, and sometimes lead and arsenic are met with; but the principal adulterant is sulphuric acid. A very simple rough test of this acid is to drop a small portion of the suspected vinegar on a piece of thin filtering paper, and warm it on a plate to evaporate the moisture. If sulphuric acid be present it blackens the paper in the spot where the vinegar dried, the oil of vitriol having charred the fibre as it became concentrated.

Wine adulteration has become so much of a science that it is possible to make wines entirely fictitious.

The adulteration of tea has assumed enormous proportions. Even in China the practice has obtained of concentrating the fine aroma of tea in essences and re-flavoring exhausted leaves therewith, poor tea likewise having its aroma improved by the addition of foreign plants.

For adulterated spices the consumer is most to blame for insisting on obtaining the article in a powdered state for less than the unbroken spice can be obtained. In such case he must be satisfied if he obtains powdered cigar boxes in place of cinnamon, other spices being also adulterated with ground crackers and refuse of various kinds.

The writer also discusses "potato blight," the poisonous ingredients of which have not yet been all satisfactorily settled, but it is probable they are destroyed in cooking. But when we consider that the tubers are in a state of dry rot, and the seat of a developing fungus, we are forced to the conclusion that such nourishment cannot be very conducive to a condition of perfect health. The poison found in diseased sausages also received attention, and the writer says that as to the true nature of the poisonous principle in these sausages, we are still in the dark. Owing to the fact that cats and dogs enjoy complete immunity from the effects of this poison, physiological experiments with these animals are useless; neither has it been possible so far to produce intentionally such diseased condition in sausages. All agree, however, in referring the origin of this diseased condition to decomposition, begun and operative, during the period of preparation.

VITAL STATISTICS.*

By C. W. CHAMBERLAIN, M.D., Secretary of Connecticut State Board of Health.

When requested by the Chairman of the Committee on Matters of Professional Interest in the State to supplement his report by one upon the lessons to be derived from the yearly census of births, marriages and deaths, and the causes that influence life and health as there revealed, it seemed to me that it would be more profitable to confine myself to some general conclusions, leaving the tables and figures upon which they are based to be read at your leisure in the Registration Report. As the subject naturally has a wide range, I may, perhaps, be excusable in prefacing what I have to say upon special topics by a few general considerations upon subjects that are intimately connected with the matter in hand.

The relation of a complete and accurate registration of vital statistics to State medicine places its importance and value in, perhaps, the strongest light. Unfortunately, even in the medical profession, the true value of vital statistics is so little appreciated that those who should be the pioneers in enforcing upon the people the necessity of completeness and accuracy are themselves the delinquents, and too often obstacles in the way of progress. Even with the spur of pecuniary reward and liability to a penalty, the profession are too often laggards. The value of vital statistics to hygiene cannot be overestimated. To them it owes its origin, and upon them it depends for each step in progress, nor can legislative enactments be even asked in support of any measure not based upon the most solid array of fact.

"Vital statistics," says Chaillé, "furnish most unerring lessons as to the health, prosperity and morals of the people; they teach the influence of marriage on illegitimacy and morality, the vital force of the children, the duration of life with its expectation and value for all ages and races, the influence of meteorology, occupation and locality in generating disease and improving health, and thereby the removal of unfavorable conditions often found where least suspected, and the approach of morbific storms, by ignorance of which negligent cities and even nations have been destroyed. The only foundation of life insurance, vital statistics serve alike to guide the resident and the immigrant, the capitalist and the laborer, the politician and the statesman, the moralist and the scientist. Ignored or disparaged too often, they have been advocated and supported by Napoleon and Thiers, by Bismarck and Cavour, by Gladstone and Disraeli, and their establishment has become a test of the degree of civilization reached by a people and their rulers."

Our first effort must then be made amongst ourselves, in inculcating a true idea of the duty of promptness and accuracy in what too often seems but an irksome and unimportant task. The last legislature, through the efforts of the State Board of Health, enacted some

* From Proceedings of Connecticut Medical Society, 1879.

improved regulations upon registration, but it is upon the enlightened co-operation of the medical profession that we must mainly depend, for unfortunately the clergy are too often derelict even with the evident relations to morality which promptness in their returns would suggest. This subject is, it is true, closely connected with the evils of quackery and charlatanry in medicine, but I know of no better way in which these evils can be met than by an organized profession. The precept of the Alabama Society is a good one to imitate, "that it would never demand, under any circumstances, legislative action for the exclusive advantage of the medical profession," and that its primary object should be the purification of the regular profession, and secondary, the suppression of quackery. Thus, even admitting the necessary imperfections in regard to the true causes of death, resulting from the reception of certificates from the ignorant, unscrupulous and illiterate, the broad lines upon which study and investigation are now directed can be nevertheless successfully followed by the general facts attainable, if completeness only be secured. Indeed, by attention and accuracy upon our own part, the evils that result from unqualified practitioners in medicine, midwifery and surgery, can be made to stand out in such bold relief that the attention of the most careless and unthinking will be arrested. As education advances and becomes diffused among the people, the time will surely arrive when the certificate of an educated practitioner only will be received as a satisfactory statement of the cause of death, and a registration of all prevalent diseases will form the basis for action by local as well as general boards of health. And as the scope and power for good of State medicine become known and appreciated more generally, as the application for the common welfare of everything that medical knowledge and legislative and executive authority can contribute, including the public care of the helpless, the sick and infirm, the inebriate, idiotic and insane, the tramp and the criminal, medical education and jurisprudence, preventive medicine and public hygiene, the complicated problems in each of these departments will be solved, for weal or woe, by the aid of the recorded facts included in the comprehensive term vital statistics.

There are many complicating elements that enter into the questions relating to vital statistics which require attention, if any valid conclusions are to be drawn. The influences of race, heredity, locality, population, unsanitary surroundings, contagion and infection, foods and water-supply, and occupations, alike require consideration. In fixing upon death-rates, we are met at the outset, in this State, with a difficulty arising from the infrequency with which the census is taken, once in ten years, with such a restless and changeable population, this gives simply a basis for calculation. The enumeration of voters and school-children each year, however, furnishes a uniform method of computing population from the average ratio these bear to the whole, and for purposes of comparison is accurate enough. It is to be hoped that hereafter we may have a census once in five years, as the general government offers to bear half the expense of the intermediate census, if taken in accordance with its methods. A completer idea of the absolute sanitary condition is better obtained by calculating the relative proportion the deaths from zymotic diseases

bear to the total mortality of the place, as, even if the returns are incomplete, it is not likely that they will be any more incomplete in one department than in another. With this result the proportion of deaths of children not over five years of age, or the infantile mortality, is to be compared. From these data a very correct idea can be gathered concerning the influences of local unsanitary conditions, and the direction in which efforts for improvement should be turned. This is especially true in relation to the cities and large towns, where the infantile mortality is a very good criterion. With reference to occupation, the comparative rate from consumption, which, in spite of epidemics, still holds the first rank, gives very valuable suggestions.

In comparing the returns with those of 1877, we find that the births were 572 less than reported in 1877, the deaths 314 less, and the marriages 11 less. The most notable difference in the number of deaths is found in the class of zymotics, which, as reported, caused 285 less deaths than in the preceding year—within 29 of the total decrease. Although there were several localized epidemics of diphtheria during the year, and a large number of cases reported, the mortality was comparatively very much less, with a total of 470 deaths against 589 in 1877, a very marked difference. Nor is the balance restored by croup and scarlet fever. The mortality from the latter is about the same, while the total for the three is 983 in 1877, and 821 in 1878.

In eleven towns of the State, 300 of the deaths from diphtheria occurred; so that, leaving what might be called epidemics out of the question, the mortality would be 170. Scarlet fever was more prevalent during the first half, diphtheria during the last half of the year, and the three—diphtheria, croup and scarlet fever—in many instances affected the same localities. The local epidemics illustrate very forcibly the power of filth in developing, if not originating the disease, and its contagious and infectious character have been repeatedly demonstrated. The most interesting of these were two instances where diphtheria was imported into villages where no cases had before been known, and no deaths ever reported as from that cause. As these were comparatively cleanly villages, while the disease spread with intervals, for the development of the infection, over the entire area, nearly, the mortality was very slight, and all the fatal cases, with few exceptions, occurred about the middle period of the epidemic. The germs or virus of the disease—whatever may be its nature—apparently had a life history, a development, maturity and decline. The seeming exceptions were in families where there had been fatal cases, and were of the third or fourth set of cases. In many instances the cases were very plainly divided into sets, with intervals of a week or two weeks between each outbreak. In Winsted there were two decided outbreaks of diphtheria, the latter much more fatal, while there were scattering cases meanwhile. The disease here was introduced from without. In three instances the contagion was retained, apparently, in bedding for months, and gave rise to malignant cases and excessive proportionate mortality, in the second outbreak. The points that were especially noted in the cases investigated were: *First*, Its contagiousness, especially from the dead. *Second*, Its infectious character, repeatedly shown in many ways. *Third*, That it can arise solitarily, as Mackenzie expresses it, and in such cases usually associated

with filth enough to originate almost any disease. *Fourth*, That in unsanitary surroundings the mortality was oftentimes excessive; yet, when a malignant type of the disease was conveyed to the localities in the best sanitary condition, malignant and fatal cases resulted. *Fifth*, The liability, in severe types, of all the children of a family having diphtheria if one were attacked. In repeated instances three, four and five, in one family were victims, and in many others all the children were attacked; as a rule the second set of cases was the more malignant, including most of the deaths. The cases in Granby illustrate several points of interest. In the spring there were several fatal cases in a negro settlement of three or four huts or cabins, in a clearing remote from neighbors, arising, apparently, solitarily; in the fall, when the same bedding was brought into use, the disease reappeared, with several fatal cases. A friend in a town adjacent came to assist in the care of the sick, and conveyed the disease to her own children, four of whom died. As the house was isolated, no cases were communicated from these.

Diphtheria is communicable, that is, contagious directly to a greater or less extent, and exceptionally may be conveyed to a third party without the medium of communication having the disease; it is infectious, especially from the dead; the germs have an indeterminate longevity,* attach themselves to the walls of rooms, bedding, clothing and the like. Except in favorable atmospheric conditions the area of its diffusion is quite limited; with the conditions favorable to fungoid growth, of which dampness is one essential, the germs may be wafted over large tracts of country. The disease, as it occurs *solitarily*, that is, isolated cases or sets of cases, is usually associated with bad sewerage, drainage or filth, to use the most comprehensive term. These cases are generally milder when it is essentially a filth disease, apparently arising from organic impurities of air or water, in the cities with bad sewerage, in the country with saturation of the soil about the house with slop-water from sinks or carelessly thrown out of back doors or chamber windows, and oftentimes from contamination of the wells, even direct communication of sink drainage and well, as in the case of the family destroyed in Orange, and many less striking instances. The occurrence of the disease in well-drained localities, which are apparently in the most perfect sanitary condition, is generally traceable to contagion, infection or the prevalence of epidemic conditions.

The Pittsburgh epidemic of 1877 illustrated forcibly the influence possibly inherent in sewer-gases. The condition of the sewers in the infected district where nearly half the 465 deaths occurred, and which was the centre from which the disease spread by contagion, is thus described: "In the sewers traversing this district a solid mass of filth had accumulated, from one to three feet in depth. *None of the street wells were trapped;* a slaughter-house emptied its refuse at the intersection of the sewers running through the two streets in the infected district. The main sewer at the time of the outbreak had not been flushed for twenty-one years." Immediately preceding the outbreak was a summer

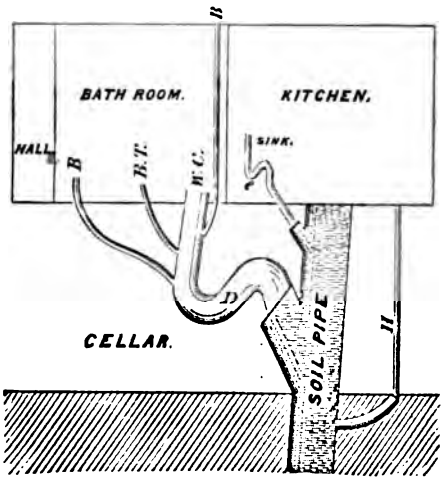
*Direct proof of vitality for three years, that is, dormant for three years and then producing the disease, is given by Mackenzie.

storm of unusual severity, which, flooding this obstructed sewer, suddenly forced its poisonous gases in unusual quantities into the houses—as the outlet of the sewer was under water, and the sewers unventilated except through the houses. The outbreak of diphtheria occurred in a few days after the storm—which, as stated, forced up the poisonous gases and also the solid filth of years' accumulation. In Boston, during the prevalence of diphtheria, from 1875 to 1877, a careful inspection showed a greater prevalence of the disease in certain of the better parts of the city, immunity in some of the filthiest; and a house to house inspection by experts "presented nothing objectionable in point of drainage and general cleanliness in 47 per cent. of the houses in which the disease occurred." The inference has been widely drawn from this that filth has not the causative relation that has been claimed. This, however, will bear a different interpretation when all the elements of the case are taken into consideration. The sewers in certain portions of the city were in as bad a condition as those of Pittsburgh, and of course the whole city was connected by these underground channels. The ready transmission of diphtheria and scarlet fever through the medium of sewers is well established, even if they are not thus caused: not only do the specific germs find there the most favorable conditions for maintenance, but the discharges from the throat in diphtheria, and the branny scales in scarlet fever, are readily wafted from place to place by the warm, moist air of sewers. Thus, in Glasgow, the lowest death-rate from diphtheria during three and one-half years was in houses having no connection with the sewers, and the highest in those having water-closets and sinks. If the sewers in Boston had been well ventilated, to say nothing of having been flushed, and if there had been any disconnection between outside drains and house-pipes invariably, the evidence of no connection between the spread of the disease and sewer gas would have been more conclusive. The unsanitary conditions found in 53 per cent. of the houses leaves but a small part for infection and contagion to play—well-recognized factors in the spread of the disease. In ordinary conditions the germs of diphtheria traverse but small areas, but in epidemics may be wafted to a considerable distance from their focus. The prevalence so marked in some of the best drained and cleanliest portions of the city showed, perhaps, a greater amount of material for the disease to feed upon. In the slums, by law of survival of the fittest, many had become acclimated, so to speak, and the local nidus for the development of the disease in the individual was lacking. The whole illustrates in the most forcible manner how closely the portions of a town or city are allied in their interests, and that all portions must be in at least passable sanitary conditions, as well as one's immediate surroundings.

The importance of a thorough protection of the sleeping rooms of children by careful trapping and ventilation of the waste pipes cannot be overestimated. One of the most common defects is illustrated by the cut on the following page, which was accompanied by three deaths from diphtheria in one family; essentially the same conditions have been often observed in connection with prevalence of diphtheria.

One large trap in the cellar is supposed to be ample protection and

gives rise to a false sense of security. This was a lower tenement; the soil-pipe running to the third floor—and as it was not ventilated, nor the traps either, every time the bath-tub was used, the trap of the kitchen sink was syphoned, and every time the bath-rooms in the floors above were used, the trap in the cellar, as well as that under the sink, was syphoned. The other pipes untrapped led to basins in bath-room and sleeping rooms, and when the main trap was syphoned,



B., pipe leading to basin in bath-room and sleeping rooms above, both untrapped; B. T., bath-tub; W. C., water-closet. The soil-pipe ran against the wall of the house to the third story. A few dollars in carrying it up through the roof would probably have saved these wasted lives.

acted as direct channels for the admission of sewer-gases to the sleeping rooms of the children. The other pipe running through the cellar was from the kitchen sinks above, and opened into an earthen tile which passed directly to the main soil-pipe, undisturbed by any trapping; this, while preventing the sewer-gases arising in that drain pipe, did not improve the air of the cellar at all. There was also another unsanitary arrangement in the situation of the bath-room and water-closet in the centre of the building, where ventilation was almost, if not quite, impossible. This situation of a bath-room, etc., is too frequently seen, and often causes harm and death.

I might go on indefinitely enumerating the instances where, in all probability, diphtheria originated from filth. Enough, however, has been said to show that there are three points to be constantly borne in mind—its possible origin and transmission by filth, that it is contagious or communicable, and infectious. In guarding against these elements of diffusion, we can hope to protect health and life from this foe.

The following table shows the deaths from the principal zymotic diseases by counties:

Population—'70,	Hartford. 109,000	New Haven. 121,000	New London. 66,000	Fairfield. 95,000	Windham. 38,000	Litchfield. 48,000	Middlesex. 36,000	Tolland. 22,000
Diphtheria	66	103	98	109	20	44	19	5
Scarlet Fever	39	132	3	21	4	11	2	0
Croup	24	61	18	29	17	6	8	4
Typhoid Fever	38	52	30	34	33	27	25	15
Diarrhœal diseases	130	135	84	72	81	31	48	20
Malarial Fevers	28	68	3	21	1	2	2	0
Cerebro-Spinal Meningitis	6	12	6	10	3	5	2	3

The increase in deaths from malarial diseases is very marked; typho-malarial fever is credited with seventy-six deaths against twenty-three last year, and the total from all forms of malarial fever, 146 in 1878, 73 in 1877—the increase mainly in New Haven, Hartford and Fairfield counties. Cerebro-spinal meningitis apparently has become endemic, as the mortality is about the same, and diffused pretty uniformly over the State. The mortality in Fairfield county from malarial fever is confined to ten towns, mainly near the shore; in Hartford county, Hartford, East Hartford and Wethersfield report four each, New Britain three. It appears to have become endemic in East Hartford, especially in the lowlands near the river. Nine towns report one death each; the remaining sixteen report no mortality from malarial fevers in 1878. From New Haven county fifty of the deaths from typho-malarial are reported. In Hamden and vicinity the greatest mortality is reported, and here malarial fevers of a pronounced type have been prevalent for several years. Thirteen deaths in Hamden and five in North Haven, all but two reported as typho-malarial, indicate necessarily a large sickness rate from malarial fevers. Five deaths from malarial fevers were reported in 1877 from Hamden, classed as congestive three, and typho-malarial two; two deaths are reported in 1876, one congestive chill and one intermittent fever. The first case originating in Hamden was reported in 1863, and was among the first in that region. I have not yet been able to learn when the first fatal case occurred there. The natural drainage of the immediate region was extensively interfered with by the flowing of large areas of land in 1860. Since then malarial fever has been endemic, affecting nearly every inhabitant, and has prevailed more extensively than anywhere else in the State. Whether this has been a focus from whence malarial fever has spread over certain portions of the State or not, is an interesting question, or whether there was any causative relation between the retained ground water and the malaria. There were eleven deaths reported from New Haven, ten from Derby, typho-malarial; Branford, Meriden and Wallingford report five each. Ten towns out of the twenty-five reported no deaths from malarial fevers. The mortality reports are not guides for the existence of malarial fever, as judging from its development and spread in Connecticut since 1863, several years prevalence precede any direct mortality from this cause. As we have seen, it is only since 1877 that it has figured to any extent in the mortality lists.

The relation to typhoid fever is shown by the following table of the relative mortality for the past ten years, 1878 down to 1869:

Typhoid.	Malarial.	Total.
252	143	395
321	73	394
327	22	349
449	21	470
370	38	408
430	30	460
506	29	535
352	19	371
427	15	442
458	9	467

Intermittent fever appears a few times since the registration reports were published, credited with one death previous to 1860. In 1861 three deaths are credited, and it thenceforth appears regularly until 1863, when it skips a year, then appears steadily until the present, averaging, including remittent fever, ten deaths from 1864 to 1869. The table shows their relative mortality since.

The deaths from hydrophobia are about the same—seven, five of which are in Hartford county, one in New Haven county, one in Litchfield.

The deaths from accidental causes figure largely this year. The Tariffville disaster and the tornado at Wallingford swell the list considerably. A very unusual number of broken necks from falls down stairs or otherwise is a curious fact; also the number found dead in bed, drowning, and death from lightning, are noticeable, while the number of homicides and suicides is anything but creditable.

———o———

Physical Education.—Absolute health is only attained when the body is equally developed in all its organs and members. The man with muscles of steel and a diseased heart cannot be said to be in good health, and diseases of stomach, heart and nervous system are often—it may even be said usually—produced by that system of development known as training. At a recent rowing match in Philadelphia, two plucky lads in contesting boats fainted as soon as the race was over. Their condition, which was apparently good, was actually abnormal, and their systems gave way because the strain which their muscles met was too great for their vital functions. Yesterday a similar but more serious calamity occurred at Sag Harbor. A Brooklyn lad, who had taken part in a pedestrian contest, when removed from the track, fell down dead. He had prepared himself for walking and running, and depleted his vital organs to build up his limbs. When the strain came, the impoverished and most important part gave way. The severe muscular exercise of college athletes has carried off many fine young men by consumption, heart disease and other disorders, directly traceable to the absurd overwork required of their bodies. There is a limit of human endurance. That limit is reached when the body is impaired in one quarter to benefit special organs. The severity of the test by which athlete prizes are won seems designed rather to award the laurels to him who is least healthy, because more unevenly developed, than to the really best man. —*Brooklyn Eagle.*

THE BENEFITS OF SANITATION.*

By CHARLES KELLY, M.D.,

Professor of Hygiene in King's College, London; Medical Officer of Health for West Sussex.

The lecturer proposed to give a short survey of the benefits that have been derived in recent years from sanitary progress. The labors of the registrar-general and Dr. Farr have resulted in giving an accurate record, for the past forty years, of the general mortality of this country, the rise and fall of epidemics, and the prevalence of particular forms of illness in one locality more than another. Death-rate varies in a certain proportion to density, yet it is possible to maintain a large number of persons on a square acre if they are properly distributed. In some of the industrial dwellings and model lodging-houses the mortality is as low as in many a country village, while in the old neighborhood around the death-rate is greatly in excess. The pulling down of old houses, the extension of open spaces, and the construction of wide streets, have done much to improve the public health. The main conditions of health are good air, good water, sunshine and food.

The improvement in the London water-supply since the year 1848 has caused a great diminution in the deaths from cholera. In Glasgow, up to 1859, water was obtained from the impure Clyde; but since a good supply was brought from Loch Katrine great benefit ensued, for whereas in each of the first three epidemics of cholera between 3,000 and 4,000 people died, yet when the pure water was brought in only 68 persons died from that disease. In Manchester pure water caused the total mortality from cholera to be reduced to one-sixteenth of its previous amount. The effect of impure water in causing enteric fever was shown by the outbreak at Caterham in the early part of this year.

In reply to those who maintain that by the prevention of disease not only human life is prolonged, but that a large number of the weakly are preserved, who in their turn bring up unhealthy offspring, it was shown that this notion was incorrect. The agencies which bring about death bring about disease in a much greater ratio, and sanitary improvements not only diminish the number of deaths, but diminish in yet greater proportion those cases of disease of which the deaths only form a small part.

Scurvy is a disease which has almost ceased to exist since the food-supply of the navy has been improved. Its disastrous effects in Anson's voyage were alluded to, while a few years later Captain Cook, by using proper precautions, sailed round the world and kept his crew in excellent health. Since the passing of the Merchant Shipping Act in 1867, Mr. Harry Leach has estimated that scurvy has decreased 70 per cent. in the mercantile marine.

---

* Abstract of a lecture introductory to the course of hygiene, delivered at King's College, London, Oct. 31st, 1879.

Consumption is the most fatal disease in this country, and it is associated with cold and damp, with insufficient food and overcrowding. The deaths from this cause are now not much more than two-thirds of what they were twenty-five years ago. The better housing of the poor, the gradual rise of wages, the cheapness of clothing, and the general advance in the condition of the laboring classes, have had their share in lessening the deaths from this cause.

Ague very rarely kills any one in the present day, though formerly it was a common cause of death. The lowering of the subsoil water and the cultivation of the surface of the land have made the fens of Lincolnshire and Cambridgeshire as healthy as the Weald of Sussex or of Kent.

The *continued fevers* have been reduced; typhus fever has not been epidemic for the last thirteen years, and the deaths from enteric fever are not so numerous as they were. The rate in this group, which in 1865 was as high as 1,100 per 1,000,000 persons living, has since gradually sunk to 400. Small-pox is a typical example of the benefits produced by preventive medicine. During the past twenty-five years, during which there has been a compulsory vaccination law, the annual death-rate has been 216 per 1,000,000 of persons living, or about one-fourteenth of the rate of last century.

A striking instance of the value of sanitary reform may be found by examining the army returns. In the second quarter of this century the mortality among soldiers was about double the rate of that among the civil male population in healthy districts. The rates now are about equal up to the age of thirty years, after which time the soldier is more liable to disease. The result has been that the annual mortality of the army has been halved. Consumption used to be very common. In the fourteen years ending in 1846 nearly 7.86 per 1,000 died from this cause, but in the eight years ending in 1866 the mortality was only 3.1 per 1,000, a reduction of more than one-half. The report of the commissioners in 1858 showed that the vitiated air of the barracks caused by overcrowding was the chief cause of this great mortality. The lessons taught us by the Crimean war are apt to be forgotten now. Insufficient and unsuitable food, bad shelter and clothing, overcrowding and defective ventilation, were the main agents in causing the spread of diseases which carried off 16,211 of our men, or about six times the number of those who were killed in action.

In January, 1855, the mortality from fever, dysentery and diarrhœa was so enormous that the army was nearly decimated; after that time disease began to decline. Warm clothing and bedding were supplied to the troops, the food was better cooked, and more attention was paid to cleanliness and ventilation. For want of proper sanitary arrangements a large part of the army had been destroyed. The Ashantee and Abyssinian wars were waged on a small scale, yet the results showed how low the mortality may be during a campaign when due attention is paid to hygienic conditions.

In the Franco-German war the Germans paid great attention to sanitary matters, and so they lost comparatively few men from disease.

The condition of our prisons has vastly improved in recent times, so much so that whereas formerly they were in so foul a state that

they often proved to be dangerous centres of infection, now it is rare to find a case of fever. The prisoners are better fed, better housed, and better clad, and the result is that the mortality is very much lowered. A century ago John Howard was traveling from town to town, intent on his great mission of exposing the miserable condition of the prisons in his day. He thus describes what he saw: "Air which has been breathed is made poisonous to a more intense degree by the effluvia from the sick, and what else in prisons is offensive. My reader will judge of its malignity when I assure him that my clothes were in my *first* journeys so offensive that in a post-chaise I could not bear the windows drawn up, and was therefore obliged to travel commonly on horse-back. The leaves of my memorandum book were often so tainted that I could not use it till after spreading it an hour or two before the fire; and even my antidote, a vial of vinegar, has, after using it in a few prisons, become intensely disagreeable. I did not wonder that in those journeys many jailers made excuses, and did not go with me into the felon wards."

The history of Millbank prison shows that small-pox, typhus and enteric fevers, erysipelas, diarrhœa and dysentery are all but extinct as causes of mortality. In a recent report, Mr. Gover contrasts the mortality in this prison from enteric fever in the ten years—1845–54—and in the twenty-one years following. In the first period there were fifty-seven deaths from this disease, and during the second period there were only three. In the former period the water used in the prison was pumped from the Thames, and afterwards filtered; but in August, 1854, this supply was cut off, and good water was obtained from an artesian well in Trafalgar Square. This change was at once followed by a great reduction in the rate of sickness and mortality, and by much benefit to the health of the inmates. For the past fifteen years not one convict has contracted fever in the prison. Fatal cases of diarrhœa and dysentery seem to be absent. When the first three epidemics of cholera visited this country, it proved very fatal to many in the prison; but on the fourth occasion, in 1866, after the water-supply had been changed, the convicts entirely escaped. But Mr. Gover shows that, not only in Millbank, but in other government prisons, there is a like immunity from preventable disease. In the twenty years 1855–74 only eight deaths are ascribed to enteric fever among a male and female population estimated at nearly 8,000; while during the five years 1870–74 only two deaths occurred in an average population of 9,509. The deaths from consumption are less than half the number they were thirty years ago. The marked improvement has been due to good water, to a plain but sufficient diet, and to better cell accommodation and ventilation. And if such results can be obtained with a population drawn from the worst and poorest classes, most of whom have been brought up in misery and want, what might not be expected if the laboring classes in our large towns could be placed under the same conditions of external comfort as our soldiers and prisoners?

Infant mortality is a good test of the health of a district. Its causes are various, and depend upon social as well as upon sanitary conditions. In the most healthy districts about 10 per cent. of the children born die within their first year of life, while in large towns

20 and even 25 per cent. die in the same period. Yet even here there has been a marked improvement of late years. Dividing the last nine years into three portions, the death-rate among infants was 156 per 1,000 in the first period, 153 in the second period, and 145 in the last three years. Thus, allowing for increase of population, there was an annual saving of nearly 10,000 lives in the last period as compared with the first. In all sanitary inquiries the death-rate under one year and under five years should be carefully examined. There are many towns in which children die with too great frequency, while adults are healthy. There are some small country places where the mortality in early life is as high as in some of our largest towns. The southeastern counties have a low rate, while in Bedfordshire it is very high. Mr. Charles Ansell has shown that among well-to-do people the infant mortality is very much less than among the poor. Collecting a large number of facts concerning the children of professional men, he found that of every 1,000 infants born 80 die in their first year, whereas 149 die according to the English Life Table; from one to five years of age, of the survivors of the same 1,000 children only 46 die among the upper classes, while among the general population 113 die at that period of life. The care and attention bestowed on children in early life is rewarded by a low death-rate. In places where, from poverty, ignorance or carelessness, children are badly fed and clothed, the mortality may be enormous. Thus Dr. Parkes found a street in Liverpool where the death-rate was so high that 90 per cent. of the children born died before completing their fifth year.

There has been a distinct lowering of the general death-rate in this country during the past seven years, but this improvement has not been uniform. The lessening of the mortality in some of our large towns is counterbalanced by the increase in places which have recently sprung into existence. And therefore, in estimating the value of sanitary work, it is not fair to examine merely the average rate throughout the country. There are many places in the manufacturing districts which are growing rapidly, and it does not always seem that sanitary work progresses in an equal degree. Again, around many towns there is a habit of building cheap dwellings just outside the local area, so as to avoid the payment of rates, and such places are generally dirty and unhealthy. If, then, the mortality of the country were stationary, it would still imply that sanitary work was doing good by preventing that rise in the death-rate which might be expected from an increased density of the population. But it is easy to go further, and to show that in many of our largest towns the effect of wise reforms has been a diminished mortality. London is, for its size, the healthiest city in the world. From a mean rate of 24.4 per 1,000 in the last decade, it has fallen to 22.8 per 1,000 in the last eight years, and this in spite of an ever-increasing population. Dr. Farr has shown that the increased density alone should have raised the rate to more than 26 per 1,000. Then the deaths during the past five years should have been 91,245; more than 12,000 lives have thus been saved annually in London alone. This result is due to an improved water-supply, to a good system of drainage, to the extension of open spaces, and to the pulling down of old and dirty houses.

In Manchester, Liverpool and Glasgow, the great centres of commercial activity, there has been a similar decline. In Manchester the death-rate during the past seven years was 3 per 1,000 less than in the preceding seven years, while during the same period the rate in Liverpool was 6 per 1,000 less. Deaths from fever in Manchester during the past four years have not been much more than half as numerous as they were in the previous four years, and there has also been a marked decrease in the infant mortality.

If England be divided into two portions, one of which contains the large town population, and the other the scattered rural population, it will be found that there is a pretty uniform difference of about 5 per 1,000 in the mortality, the numbers being respectively 24 and 19. So that if all the country districts could be brought down to the rate of the healthiest places—*i. e.*, 15 per 1,000—then we might expect that the town centres should have an average of 20 per 1,000. It does not seem likely that a much lower rate will be reached, nor need you be too eager to dwell in a dreamland, where in a state of perfect health you would linger through a life of infinite dullness.

There are other conditions which greatly affect the health of a people, over which sanitary work has no direct control. The death-rate is much affected by temperature. In the cool summers of 1860 and 1877 the mortality was very low. During the past wet summer, when for several weeks the temperature was below the average, the mortality in London was as low as 17 per 1,000. A long cold winter causes the death of young and old, but it has not much effect on the healthy and strong adult. The most fatal results are met with when there is a great daily variation in the temperature, and when the nights are extremely cold. Prolonged and even intense cold is better borne when the air is dry, and when the nights are not much colder than the day. Great heat is fatal to infants and young children. The hot summer of 1868 caused the mortality to rise 3 per 1,000 above the average, while in the cool summers of 1860 and 1879 the rate was as much below the average.

The Adulteration of Food Acts have led to a great improvement in late years. Twenty-five years ago, when *The Lancet* Commission first inquired into the subject, more than half the samples were on analysis found to be impure. During the past four years there has been a marked reduction, and now less than one-fifth of the articles examined are found to be adulterated. But whereas formerly all kinds of injurious substances were added, it is now more common to find that dilution with water is the chief fault, and this, though a fraud upon the consumer, is attended with much less evil effect.

These, then, are the most important benefits which have accrued to us from the legislation of the past thirty years. But not by trusting merely to Acts of Parliament will the full gain be realized. The health and comfort of mankind rest to a great extent upon the conduct of each individual. Education and sanitary work must in the future go hand in hand if we would hope to check those causes which, amidst the conflicting elements of our social life, and in the eager struggle for existence, are ever at work tending to increase disease and suffering.—*The Lancet.*

PHILADELPHIA SEWERAGE.

House and street drainage and sewerage is a subject of vital importance to the people of a great city, and yet, singular as it may seem, it is but recently that any attempt has been made to understand it, and it is only within fifty years that any successful efforts have been made to free the large cities of the world from the fatal effects of accumulating filth. Mr. John E. Addicks, the health officer of this city (Philadelphia), who has paid special attention to this subject during the years which he has held that responsible position, was called upon in regard to the subject as applied to this locality, and gave his views, the main points of which are embodied below. Said Mr. Addicks: "The drainage of this city never was good, and the consolidation of the old districts has added to the defectiveness and rendered it extremely difficult to get a homogeneous system. Scientific and medical men are anxious upon this subject, but the trouble is, we cannot get money enough. We have a vast surface drainage and underground also, which needs more attention than the other. The system of private drainage is a source of disease, added to constantly by the doings of incompetent workmen, who know nothing of science, and do patch-work so that effluvias get into the houses, and we do not know where it comes from, and it produces scarlet and typhoid fevers, diphtheria and other kindred diseases. We often notice this smell in our own domiciles. What produces it? Why,

DEFECTIVE PIPES,

bad closet work; and the people get sick and everybody wonders why? If I could, I would abolish every private closet in the city of Philadelphia; they should be placed out in the air. It would not be so pleasant or comfortable, of course, but a great danger would be averted. Work in them is not well done in the first place, and in the second place they are not well kept; there should be a constant flow of water through all such drains. Take the case of your boilers—they are hardly ever in good order—you notify the plumber, he comes and attends to it, and before he is out of the house hardly, the trouble is as great as ever, if not worse than it was before. The plumber will tell you that the constant contraction and expansion going on in the iron becomes unevenly distributed by the wear and tear, and there is a break. Now the pipes we use for drainage are just precisely the same; they do not, as a rule, break from the weight upon them, but the constant expansion and contraction caused by the temperature breaks them. You know it is fashionable to hide all these pipes under the partitions and in the walls, when they ought every one of them to be exposed, so that the least break or defect could be seen and at once repaired. The stationary wash-bowls are open to the same objection; if you want to repair them you must rip up the whole room almost, and then there is bad material used in them, and these very pipes are the source through which disease, as an insidious, wily enemy, comes like a thief in the night, and people get sick and

die without knowing how they became afflicted. The bulk of the reports which I receive are scarlet fever and diphtheria, and the great majority arise from these very pipes and the drainage system in houses. You take the wash-bowl, if it is not properly trapped, it is sure to smell. Well, we will say it is properly trapped, that is with an S bend in the pipe where the water rests, but the bank gets stopped up and it is not used, the water evaporates and there is no trap at all. But even if there is a trap, there happens to be a pressure of gas in the sewer, why it goes right through the water, and there might as well be no trap there, for it is perfectly useless. These are only some crude ideas upon the subject, but I put them in a forcible, plain way, because the importance of this subject demands it. If you lifted the pipes of this city, or rather the coverings of them, and turned the place upside down, you would see a most horrible sight.

"Again, the grade of our sewers is awful; the manner in which they are built is bad. The contractor lays his brick side by side on the bare ground, not in gravel; that is just what you don't want; then he smears cement over the upper half. Now all the sewage leaks into the ground until it gets so saturated that it can't hold out, and the most of the material percolates through the soil. Sewers should be water-proof and so constructed that they will not leak either up or down. In some of the cities of Europe they are laying their drain pipes of glass or vitrified material. Then, again, the inlets to sewers are badly constructed. Chief Commissioner of Highways, Mr. Baldwin, will tell you they are badly located, badly constructed, and badly trapped, both in the float and inlet. Now I'll just tell you how some of these people construct sewers. Some years ago, in laying a sewer, one of them came upon a private sewer, which he took up, and in relaying it, according to the plans, he came across a huge boulder, which he couldn't go around very well, nor could he go under it, for it might have extended to the centre of the earth for all he knew, so he very quietly ran the sewer over the boulder and made it just like a syphon. Of course the drain was worse than useless; that was bad work, but it was underground, and it would never have been found out where the trouble was if the street had not happened to have been dug up some time afterward to repair a water-pipe. Public sewerage is better than it used to be, but it is not what it ought to be. This contract system of work is bad in every way. No contractor will lose money on his job; that isn't human nature. A department asks for work to be done; a chap comes along and offers to do it for less than we know it can be done for, but he swears he can do it, and the law compels us to give it to him. Well, he does it, and it isn't very long before it falls in, just like the Mill Creek sewer has done half a dozen times.

THE ROMAN AQUEDUCTS

were not built in that way, and they did not lay a nine either. Our folks didn't lay it so that it is nine inches, but set it on edge so that it is only four inches. The people should be nursed up to a proper understanding of this subject, for, as I have said, it is of vital importance to the health of the city."

Mr. Addicks stated that Dr. Rudolph Hering, C.E., had given

great attention to this subject of city sewerage, and from him a number of valuable ideas were gathered. He says in a pamphlet prepared for private distribution among health authorities: "Modern medical science has made great progress in discovering the causes of the origin and spread of disease; and it is now pretty well established that typhoid fever, diphtheria, scarlet fever, cholera, and other malarial diseases, are caused directly or indirectly by decomposing organic matter. The efficient removal of all refuse is therefore very essential for the good health of the city." It is a fact verified by statistics that, where house-drains and sewers have been skillfully designed and constructed, a marked decrease of sickness and a reduction of the death-rate have resulted. Mr. B. Latham cites twelve cases of cities and towns, with populations ranging from 7,818 to 68,056, and death-rates varying from 19 to 33 per 1,000, in which, after the completion of sanitary works, the rate was reduced to from 18 to 26 per 1,000, with a diminution in some of typhoid fever cases from 10 to 75 per cent., and from 11 to 49 per cent. in cases of phthisis.

As the drainage system of our city is notably bad, it will justify the conclusion that the occasional prevalence of malarial diseases has probably had its origin in this cause, and the importance of considering a remedy is therefore apparent.

HOUSE-DRAINS.

The house-drains form the most important part of the drainage system. Upon the care bestowed upon them will, in a great measure, depend the ultimate success of the whole from a sanitary point of view. As a rule they are thoughtlessly designed and carelessly executed; although many of the plumbers, who generally have sole charge of the matter, may be excellent and conscientious workmen, they are generally not versed in the principles of the science governing the design and execution of their work, or are prevented from carrying them out by the unwillingness of the property owner to meet the expense.

Colonel Waring has formulated the requirements of a perfect system of house-drainage as follows:

Allow no organic decomposition to take place within the dwelling, or within any drain or pipe connected with it under conditions favorable to the propagation of unhealthful influences.

Allow no air that has once been inside of a drain or soil-pipe to enter the house under any circumstances.

The methods of drainage in the main are divided into three systems:

First. The drainage of the soil-pipe discharges into a cesspool or well, and the waste waters are conveyed on the surface into the street gutters. This is the oldest system, and until recently the most used, and is still designed for many new houses built on streets without sewers. In old houses the wells are generally in the cellar; in the new ones they are in the yard. They are lined with bricks, *laid dry*, and, therefore, let the fluids soak away into the adjoining ground. We then allow decomposition to take place in the wells within or near our dwellings, and this under conditions favorable for

SPREADING DISEASE,

and also allow air from the cesspool, especially when in the cellar, to rise directly into the house. The surface discharge of waste water is not injurious to health, because it facilitates oxidation. But it is annoying and disagreeable, partly because we see it constantly, partly because it covers the sidewalks with ice in the winter and endangers the comfort of pedestrians.

Second. All drainage is conveyed underground to the sewer, including the overflow from the cesspool. This system is the most common. The old cesspool, still used as before, is connected with the sewer generally by an eight-inch terra cotta pipe. From this a soil-pipe, usually of cast iron, four inches in diameter, is carried up to the closets. Waste-pipes, not over one and a half inches in diameter, run from the kitchen, bath-room and washstands into the soil-pipe or main pipe, but generally in a manner which requires the shortest length of pipe, whether this is the best way or not. The spouts are generally carried into the main pipe. Nearly always traps are put in under each place where refuse is received, as under each sink and washstand. Sometimes an additional main trap is placed where the pipe enters the cellar. The intermediate air-locked portion is then connected with some pipe leading to the roof, generally a rain-water spout. Plumbers say that hardly one house in a hundred has its soil pipes ventilated, and much more seldom its waste pipes. No provision is ever made to allow fresh air to enter and circulate through the pipes. The work itself is generally done very badly, especially in the bonus houses. It is amazing how recklessly some houses are drained, thus producing and increasing, in reality, the very evil they are intended to avoid.

Decomposition is allowed to take place under conditions favorable to the propagation of unhealthful influences, as the sewage remains there a long time before the overflow carries it away, and the contaminated air, when originating in the cellar, rises immediately into and through the house; or, with the well in the yard, it may be carried to the windows by the winds. The

ABSENCE OF VENTILATION

promotes decomposition in the pipes, and as the joints and fittings are often poorly made, allowing an escape, the poisonous gas reaches us also directly from this source. During a heavy rain storm the sewers receive much water; the air is, therefore, forced out, and as the manhole covers are tight, it blows out the weakest traps and enters our houses. It can often be detected by the bubbling noise in the washstands and closets.

Third. All drainage is conveyed directly into the sewer solely through pipes, without having any cesspool on the premises. This is the latest system and the best. It carries, when properly designed and built, all refuse matter as directly and as rapidly as possible away from the premises. But the details are the same as before, with the same objectionable features, excepting those of the cesspool. With the absence of proper ventilation and of a most careful design and execution of all its details, in order to prevent the air inside of the pipes from entering the house under any circumstances, it is impos-

sible to have a system answering the requirements of health. These imperfections exist because there is an entire absence of municipal regulations governing the details of house-drainage. Proprietors and plumbers have their own way, and carry out their own ideas. It cannot be doubted that there is as much scientific knowledge necessary for designing and constructing efficient sanitary works as for any other branch of engineering. Therefore neither the average householder nor the artisan, however skillful he may be, can be expected to properly accomplish the desired end.

The importance of having the best design and quality of work requires the official authority of the best available talent, at least as much as for other municipal work. Water-pipes are laid according to regulations. Gas-pipes are carefully inspected as to their sizes, directions, bends, positions, etc., in order to prevent accidents. But drain-pipes, on the condition of which depends to so great an extent the health and lives of our families, receive no attention whatever in this city. The first requirement, therefore, is municipal regulations in accordance with the latest information that the respective sciences furnish us; and the second, an efficient system of carrying them out, by intelligent management, by licensed plumbers and by inspectors, placed under bonds.

In regard to the present

SYSTEM OF SEWERS

in this city, there is difference of opinion, as some engineers contend that much can be said against them. From data furnished by Chief Engineer Smedley and Commissioner Baldwin, there are about 200 miles of sewers in the city, the main sewers being of various sizes, the branch sewers generally being three feet clear in diameter and originally circular in form. They are built with a four-inch ring of brick, the invert being usually laid dry and the arch built with mortar. After several years they are found to be more or less elliptical, the long axis being horizontal, which, when well built, should not occur. If the ellipse is too flat, then the arch falls down. If it does not come to this, it has a form which gives for the usual flow a large surface of friction for the amount of water, precisely the opposite of what is desirable for a perfect sewer, as the velocity is thereby diminished and a deposit caused. As the bricks in the sewer are not laid carefully, the sides are very rough, which

IMPAIRS THE VELOCITY

of the flow, and allows solid particles to adhere and decompose; and, in some cases, the sewer retains sufficient solid matter to fill up and require manual labor for cleaning it.

There has been no systematic provision for ventilation. Among all the devices for this purpose, none seems to answer better than to have frequent openings from the sewers into the streets, for the free entrance and exit of air. But the manholes, built at intervals of from 200 to 400 feet, are covered with tight-fitting cast-iron lids.

The connections of the house-drains with the sewer are made by the plumbers. The city reserves the right to inspect the connections; but, judging from the fact that by far the most breaks in our small

sewers occur just where such connections have been put in, this also cannot have been done very perfectly. Our sewers are not water-tight, but allow sewage to soak into and penetrate the ground instead of taking it away. The flat bottom and the roughness of the sides reduce the velocity considerably, which either prevents the removal of the sewage before decomposition, or actually causes a deposit. There is no ventilation, no ingress or egress of air, except by forcing the traps that lead into our dwellings. They are not built in the best practical manner, nor with reference to the cost of maintenance, which has been immense. About $100,000 are yearly expended to keep our sewers in repair. By regulation, the size of a main sewer must be sufficient to enable it to discharge an amount of storm water equal to the rain fall of

ONE INCH PER HOUR,

and, as a consequence, the main sewers are extremely large, and it is believed by some engineers, are entirely too large, an addition, too, involving a large expenditure of money. A provision for a half-inch rain fall, it is declared, would be ample, and the cost of the sewers would be diminished several million dollars.

Mr. Chesbrough, of Chicago, says that in England it is the practice to allow for a discharge of half an inch of rain, together with the greatest amount of sewage. Boston, Providence, New York and this city, according to statistics at the Smithsonian Institute, have about the same rain-fall, where the heaviest showers occur, and in Boston the sewers are calculated for one-quarter inch rain-fall; in Providence, which has the best system in the United States, they allow for a little over one-half an inch, and find it perfect. The draining areas here are very large, and the sewers become immense. Leaving out the basins of the Wissahickon, Pennypack and Tacony creeks, which ought never to be turned into sewers, there is the Mill Creek, draining about 3,000 acres, with sewer 20 feet in diameter for two miles; the Hart Creek sewer, draining 2,000 acres, from 13 to 16½ feet in diameter for about two miles, and the Honey-Run sewer, which will drain about 4,000 acres, has a diameter of 14 feet six miles from its probable outlet. It can readily be seen what stupendous works are in prospect, and it is estimated that it will require at least three millions of dollars to provide for main sewers necessary during the next twenty years. It seems to be proven that there has not been a shower sufficiently heavy to fill any of the largest sewers, except when they are tide-locked or otherwise improperly built, and the main sewers are massive and strong, so that they should stand great upward pressure even when they are filled. The arch of the sewers should also resist external pressure; but some of those even built within two or three years have failed to answer the

REQUIREMENTS OF STABILITY

and good workmanship. A certain velocity is required in all sewers that are to be self-cleansing, and when the wetted perimeter is decreased in proportion to the sectional area the velocity is increased. Ventilation has not yet been introduced, and is a difficult subject; small pipes are easily ventilated, but large sewers require artificial assistance. In London large ventilating shafts have proved a failure,

while in Frankfort, the best drained city in the world, they have been reported a success. Although physicians and engineers have said so much about bad drainage, but few seem to realize just where the technical imperfections are; there is much talk upon the subject and very little practical action. In the opinion of experts, a perfect system of sewerage demands the following conditions:

A. To allow no decomposition of organic matter to take place under conditions favorable to the propagation of unhealthful influences.

This can be accomplished by:

1. Water-tight sewers.

2. Rapid reception and conveyance, together with effectual discharge of all sewage and storm water.

3. Proper ventilation.

B. To be readily accessible in all its parts.

This is accomplished by a sufficient number of manholes and lamp-holes, serving at the same time as ventilators.

C. To build with a uniformity of design and in the best practical manner.

D. To be designed with reference to economy of first cost and maintenance.

A system of pipe-sewers twelve and fifteen inches in diameter would answer the above requirements in a far greater degree. Engineers have, until recently, preferred to build sewers very large, so that, as has often been said, there will be a chance for considerable deposit, and still enough room for the water to flow. But this is in opposition to the first and principal requirement of a perfect sewer. It should not be a sewer of deposit, but should convey the sewage as rapidly as possible to the place of its final discharge. The fact now recognized is that all increase of size above the required capacity is an actual injury, because it diminishes the scouring power of the current and increases the amount of space to be ventilated. Twelve and fifteen-inch pipes have more than enough capacity to take away the heaviest rainfall in our city for a length of several squares. The whole city of Saratoga, including the drainage area of a small run, has been effectually drained by a single three-foot sewer. As the requisites of quality and strength of

VITRIFIED PIPE

are now so well understood, failures occur very rarely, if ever, as long as proper skill and care are exercised in laying them. They are extensively used in the best-drained countries in the world. As it is entirely practical and even economical to lay pipes in a perfect manner, it cannot be urged as an objection that they have occasionally failed from improper construction.

The main advantages are:

1. They are water-tight when properly jointed and bedded.

2. Owing to their smoothness they will rapidly receive and convey all sewage when they are carefully laid to the proper grades and curves. They will admit of a smooth and neat connection with the house-drains, thereby likewise increasing the velocity.

3. They can be properly ventilated. At present, the prevailing opinion among sanitary engineers is, that all sewers should have free

communication with the atmosphere as often as possible, through open man-holes. The oftener the air in the sewers can be replaced by a fresh supply the better. The man-holes being of the same size, a 12-inch pipe would stand a much better chance of having its air renewed, as it contains only one-ninth as much as a 3-foot sewer. As the flow is more rapid, it would draw the air with it and help the exchange. As there is a quicker discharge and a smaller surface exposed, the sewage will be less liable to decompose and vitiate the air.

4. They can be readily accessible when properly built and provided with man-holes.

5. There is no experience, so far as engineering is concerned, that prevents them from always being built in a perfect manner, that is, with regular grades and lines, with perfectly tight joints, and with such foundations as will make an uneven settlement, breaking the pipes or joints, very rare, if not impossible.

6. They are at present cheaper than 3-foot brick sewers. The cost of maintenance would be much less, and they could be thoroughly cleaned by a stream of water from a fire-plug.—*The Press.*

Women as School Officers.—The Chicago *Legal News* has the following excellent testimony in favor of women as school officers:

"When Judge Bradwell, in 1873, introduced in the Legislature of this State the bill which is now a law, making women eligible to all school offices, the opponents of the measure claimed, if passed, it would be a dead letter, as women would not consent to take office; and, if they did, they would only show that they were inefficient; and that if a woman was once elected to a responsible school office, she would never be re-elected. The bill became a law, and the very first year fourteen women were elected county superintendents of schools; and the Hon. Newton Bateman, State Superintendent, gave it as his opinion that the average ability of the women that were elected was higher than that of the men. Every year since the passage of the bill, Illinois has had quite a number of women superintendents, all of whom have proved faithful, efficient officers, and not a defaulter has been found among them; and this is more than can be said of all their brother superintendents.

"A number of these women superintendents have, from time to time, been re-elected. Among them we will mention Mrs. West, of Galesburg, who is one of the most capable superintendents in the State; and Mrs. Mary L. Carpenter, who was elected at the first election under the law, and has been re-elected at every election since. She has just entered upon her seventh year as superintendent of the public schools of Winnebago County, one of the best counties in the State. During six years Mrs. Carpenter has held the office, she has examined 1,829 applicants for teachers' certificates, granted 1,267 applications, and refused to grant certificates to 562 applicants. The number rejected shows that Mrs. Carpenter can say no, as well as yes, when her official duty requires it. We hear nothing but golden opinions expressed of Mrs. Carpenter and her ability. It is very evident she must have given entire satisfaction, or she would not have been re-elected the number of times she has."

MENU.

The Effects of Hardness of Water on Cooking, Tea and Coffee Making.

Alexis Soyer, the celebrated *chef de cuisine*, one of the few men who had studied the effects of hardness of water in reference to domestic arrangements in a comprehensive and exhaustive way, when examined before the General Board of Health, gave the following evidence, which is of sufficient interest to justify reproduction in our columns:

When I first became cook to the Reform Club, we occupied Gwydyr House, which was then supplied with Thames water; it was very hard and had sometimes a disagreeable taste; this, however, we found was occasioned by the cistern, which we remedied; it was, however, at all times very hard; we were, in many processes, obliged to use potass or soda for the water to soften it. In boiling cabbage, greens, spinach, asparagus, hard water gives them a yellow tinge, especially French beans; hard water shrivels greens and peas, and this is more particularly noticeable in the case of French beans; the process of boiling is also longer, and more fuel is required; with dry vegetables certainly one-fourth more time. I do not think it acts so much upon potatoes, but still it has an influence upon all sorts of vegetables. I do not see the same effects, however, upon roots generally as upon leaves. Hard water does not open the pores of salt meat so freely as soft water. On fresh meat it likewise has a prejudicial effect, but not equal to that on vegetables. It has the effect of making very white meat whiter than the soft water; upon all delicate things it has, however, a more marked effect; for example, in making beef-tea, chicken, or veal-broth, or upon lamb; and the more delicate the substance is, the greater is the influence of hard water upon it. A hard water, as it were, compresses the pores, whilst a soft water dilates them, and extracts the succulent matter which they contain. The evil of hard water is more visible in small quantities, such as broth or beef-tea. It will be more prejudicial or expensive in domestic cookery, which must be in small quantities. In the larger operations, where there is much boiling, the boiling itself, and for a long time, reduces the hardness.

I have not had practical experience in bread-making; but there is not the least doubt that soft water is of the greatest importance, as making the best bread. This is exemplified in Paris, where the water is hard, and where bread which is made in imitation of Conness bread, though made with the same flour and by the same bakers, never equals that made at the place itself, where the water is soft. I am informed that part of the water at Glasgow is very soft, and that the Scotch bakers from thence, when they first come to London, cannot understand why the bread does not rise so well as in Glasgow, even though they make use of the same yeast and flour. It is well known that the addition of a small quantity of bicarbonate of magnesia in the water renders bread lighter and whiter.

As regards tea, hard water is injurious, as it deteriorates the flavor;

it also requires more tea to give an equal strength. In respect to coffee, hard water produces a similar effect, but not quite so powerful.

With respect to the comparative effect of waters of different qualities in the preparation of tea. In making the experiments, as time s of importance for the effect as well as for economy, I thought it proper to take an account of it. For culinary purposes I am confident that that water which boils the quickest is the best; and I conceived that this might be ascertained in respect to tea. I took samples of the common tea in general use, green tea, and tea of a third class, and prepared them with equal quantities of water. I took as the standard of water distilled water, which I obtained from Apothecaries' Hall. The whole results were more striking than I had previously anticipated. The soft or distilled water had extraordinary power in obtaining quick extract; the result showed, perhaps, too high a power, for it draws out the woody flavor. Next to it was the artesian well water, which is one-third less hard than the Thames water. I should indeed prefer that water to any other tried in these experiments. Although the distilled water draws out the aromatic property of the tea more than the Reform Club water, it does not, I think, produce so good an extract. Each water gives its own shade, and has its own distinct extract. Finding the result so extraordinary, I solicited the assistance of two friends, Messrs. Hooper, the most eminent tea-tasters in London. The results were the same, and the following table gives the conclusions I came to:

KINDS OF WATER.

	Time taken to boil. Min.	Their rank in making tea.
Covent-garden, an artesian well	8¼	5
Distilled water from Apothecaries' Hall	5½	2
Reform Club, 350 feet deep, and Trafalgar Square	6¼	1
Camden Town, sunk 200 feet in the chalk	8	—
New River, from a cistern in Billiter Street, City	8	3
Wellclose Square, a spring	10	—
Camberwell, a sunk well, 60 feet	10	—
Thames, from Hungerford, two hours after high water	9½	4
Standard solutions of lime-water, reckoned according to Clarke's scale of hardness—		
2 deg	7	6
8 deg	7½	7
16 deg	8¼	8

My experiment was with pints of water in the same size stew pan, with a gas lamp, so that the heat was manageable, and the same in both cases, and there was certainly a difference of full two minutes in favor of the boiling of the soft water; and the same result was given in several experiments.

From these experiments, in stating the general results as to the relative power of the hardest and the softest water in making tea I should say that whilst with the hard water three cups might be made, with the soft water five might be made. The extra expenditure of tea by the use of Thames water is nearly one-third.

I consider the action of water in tea a fair test and representative of its action on meat and vegetables in general, in all the delicate processes of cookery; and I have proved it in the following way:

I have taken a solution of 16, and compared it with the water from the well of the Reform Club. First, with vegetables; that is, carrots, turnips and onions, cut into small pieces of about one inch long and an eighth of an inch square, such as are used in Julienne soup, placed in two saucepans, with the same quantity of water and on the same gas stove; those cooked in the Reform Club water were quickly done, and the flavor of the vegetables was distinctly recognized in the water; whilst those cooked in the solution never became tender, nor did the flavor go into the water. Secondly, with potatoes. I cut a peeled potato in two, and boiled them at the same time in the above waters; the difference was easily distinguishable, that which was boiled in the hard water being harder, but at the same time whiter. Thirdly, in extracting the juice . . . . or gravy from meat; the soft water does so quickly and well, but the hard water, instead of opening the meat, seems to draw it closer together, and to solidify the gluten, and I believe that the true flavor of the meat cannot be extracted by hard water. In boiling salt meat, less salt is extracted when boiled in hard water, and at the same time the meat is not so tender as when boiled in soft water. Soft water evaporates one-third faster than hard water. I should, in every way, give the preference to soft water, but at the same time, if very tender meat is required to boil very white, hard water should be used.—*The Caterer.*

Organisms in Ice from Stagnant Water.—During the past season, on account of the unusually mild weather, ice has been gathered quite extensively from stagnant water in canals and ponds. Since the middle of February I have been making microscopical investigations with regard to the purity of such ice. The plan adopted has been to select only those fragments taken from the interior of blocks which appear clean and transparent to the unassisted eye. On melting those fragments, and examining the water thus obtained with various magnifying powers up to 900 diameters, bits of vegetable tissues and confervoid growths are usually recognizable at once. I have not noticed animalculæ in an active state in water from ice that has just been melted; but, upon allowing such water to settle and become warm at the ordinary temperature of a room occupied for living purposes, the sediment deposited may be found to contain, after some hours, monads whose movements are easily discernible with a magnifying power of from 200 to 400 diameters. Upon allowing the water to stand still longer, I have found the confervæ growing thriftily, and, in some instances, forming clusters or bundles frequented by minute animalculæ, the entire appearance in this case being similar to that presented by the nests occupied by the young of the common *Paramecium* which I have seen in stagnant water. As the result of these investigations I am fully convinced that freezing does not free water from filth due to the presence of sewage or decaying vegetable matter; and further, that it is altogether probable that the germs from which animalculæ are developed, if not the animalculæ themselves in a quiescent state, are present in very much of the ice taken from stagnant water. This being the case, it would seem that the use of such ice in drinking water is hazardous, to say the least.—M. A. VEEDER, in *American Naturalist, for May.*

Editor's Table.

Princeton College: Neglected Drainage and Bad Plumbing a Dispensation of Providence!—At the conclusion of the class-day exercises at Princeton College recently, President McCosh remarked, in substance, as follows:

"We regret much that we have been obliged to conduct your graduation without those pleasant exercises which usually accompany the Commencement. We owe it to the memory of those who have been taken away from us, to the feelings of their friends, to the sentiment prevailing in the community, to go through our duties in a subdued manner. The amiable and promising young men who have been removed from us will be remembered by their classmates all their lives. We all sympathize with their bereaved fathers and mothers sorrowing over the loss they have experienced, and many are praying for them that they be supported and comforted. We submit to the trial as a dispensation sent to chasten and to humble us. Princeton, it is well known, is a healthful locality. During the eleven years and a half I have been here, prior to April last, there have been only three deaths in our college, and these were produced by diseases not contracted in Princeton. Never visited by any epidemic, we had become too confident, and did not take sufficient precautions to remove the sources and causes of fever. In the months of April and May six of our 473 students died, two of these not wholly from malarial fever. Two of them died in our rooms, happily with their parents beside them. The others had been removed to their homes by their friends. Besides these six, we had about twelve or fifteen affected seriously. Nearly all of these, so far as I have been able to learn, are now well or convalescent. I have heard of no new cases of fever appearing during the last three weeks. I believe that we have discovered the local causes of disease, to wit, defective drainage from, and plumbing in, our college buildings, and effective steps have been taken to remove them, I believe, with success. Recent statistics by the enumerators of the census show that the general health of Princeton was never better, and that there are no diseases prevailing here."

This confidence in the healthfulness of Princeton by President McCosh, his predecessors and associates, seems to have been such as not only to have inspired them with faith in the protecting power of an overruling Providence, but equally in college builders and plumbers, who, it appears, also trusted to Providence, as such people habitually do, to protect them in their ignorance or negligence of conditions, commonly supposed to be recognizable by better educated and more careful men—the presidents and professors of institutions of learning, of which Princeton is a brilliant example. And for this reason it

is that this case has been made so much of. It was only one of the many school endemics commonly occurring, due to the criminal neglect of persons in charge, but who are ever ready to shirk responsibility when overtaken, by attributing the neglect to some one else.

Many other collegiate and other institutions there are throughout the country in like conditions with Princeton College previous to June last, and if the trustees and the *health authorities in whose precincts they are*, are wise and attentive to their duties, they will profit by the exercise of timely means to avert a like "dispensation."

"**Unsanitary Engineering.**"—A kindly criticism on the paper under this title in July number expresses approbation of the course of those physicians and other persons who reject what the writer is pleased to call the "refinements of ultra-scientific men" on sanitary matters, "insisting only upon essentials in drainage, sewerage and ventilation," and accept such as those practiced heretofore at Princeton, and are common to most public institutions, "sanitary" resorts, hotels, school-houses, churches, theatres, and many private residences, where thousands of people catch their death through reliance "only upon essentials," which are, at best, limited to restricting offensive odors and obstructing the vision—to throwing dust in the eyes of the people, that they may not recognize and avert the dangers which await them. It may be that there are some people, some physicians and college presidents, at least, who are profound in all knowledge, and who, though apparently absorbed in unlimited fields as medical practitioners, or as executive heads of extensive institutions for the education of youth, have a sufficiently comprehensive scope of the sciences to be capable of intelligent judgment on all questions of sanitary science as well; but we venture to say such persons are exceedingly rare. Men of many talents and some of many sciences there are, no doubt, but many more of mere opinions, and some in high scientific places, ever ready with opinions not supported by knowledge, and cannot be, consistently with a due regard to their more ostensible, and apparently more absorbing special spheres of duty. The medical practitioner of to-day must indeed be a man of very extraordinary talents to be able to comprehend and practice equally well all the branches which now pertain to practical medicine, to say nothing of sanitary science. Time once was when the medical profession disdained to step outside the sphere of its exclusive monopoly in curative specifics, and some men belonging to it still claim the whole field as their special preserves. But happily for the well-being of mankind, under the progress of preventive medicine—the most vigorous of all the off-shoots of medical science—

the know-alls are growing less and less numerous daily. The progress of sanitary science has not only won the recognition and respect of the most learned men of the medical profession, but of the most learned of all professions. The day has gone by for catering to popular ignorance as a stepping-stone for the successful medical practitioner. The broadness and continuous expansion of the field of medical science so far exceeds the bounds of any one man's capabilities of comprehension that he who would attempt to successfully cultivate the whole of it, will, of all, be least likely to make a furrow in any part thereof. In no branch of science based on this broad field would failure be more certain than sanitation; for no branch requires so much additional knowledge for its successful application And this being true of sanitary knowledge based on medical science how utterly preposterous the conceits of college presidents and the heads of other institutions, with the health and lives of many individuals in their keeping, to reject sanitation as among the "refinements of ultra-scientific men," and abide the issue as did Princeton; and *then* call in the sanitarians!

The public sense is now justly aroused to the dangers of badly placed steamboat boilers, to the tinder in hot places, to the incompetency of captains and pilots, and to the insufficiency of life-preservers. The loss of life by diphtheria, typhoid fever, diarrhœa and other filth diseases, due to no less glaring ignorance and criminal neglect on the part of those who control educational institutions throughout the country, is a hundred-fold greater than that which pertains to steamboat collisions and explosions. Are the lives thus lost any less valuable—any less afflicting—because the loss is in constant process? An occasional explosion, such as that at Pittsfield, St. Mary's, or Princeton, arrests attention for a week or so, is investigated by the authorities concerned instead of by the coroner, much sympathy is expressed for the "dispensation" of bad plumbing and soil filth; and it may be, as in the recent case above mentioned, sanitarians are called in, as physicians usually are, to take care of the consequences, instead of being primarily employed to avert the causes. Meanwhile hundreds of institutions, with their hundreds, and—including public school buildings—thousands of occupants, are in constant subjection to disabling and fatal conditions; factories not only of the acute diseases named, which most commonly attract attention, but of the still more deadly diseases—scrofula and consumption. Wherein consists less criminality in the one case than the other—the school officer, the hotel proprietor, or the steamboat officer? Preventable mortality is alike criminal mortality for all, and if there be degrees of guilt the greatest attaches to those who occupy the highest places.

The Essentials for the Protection of the Public Health in Brooklyn, appear to be wholly of a political complexion. At the beginning of the year the Health Officer, Dr. Otterson, asked for an appropriation of $51,000. This amount was deemed so reasonable that the Board of Estimates resolved to allow $49,000, being a very slight retrenchment. When this was done the Democrats had control of the department. But subsequently the law was changed by the Legislature, and the control given to the Republicans, and Dr. Crane was appointed in the place of Dr. Otterson. The Democratic Board of Estimate was forthwith seized with a spasm of economic virtue, reconsidered the previous action, and, with great compliment to Dr. Crane, concluded that he could administer the department for $22,000. On this action the *Eagle* justly remarks:

In view of the fact that the same Democratic majority who were prepared to allow $49,000 for the department under Otterson, also voted $50,000 to it last year, it is impossible to escape the conclusion that there has been a deliberate move made to cripple the department because it is now presided over by a Republican. This, we say, is indefensible. The public expect to see the Mayor and his associates insist upon the most rigid economy being enforced, but they cannot be induced to accept this as an economical act. It is of very great importance to the city to have the Health Department in an efficient condition. To say that $22,000 is money enough to make it so is foolish. It seems to the *Eagle* that the Mayor ought to have this matter reconsidered. It is bad in every way as it stands.

It is evident by this action that the Board of Estimate have no just appreciation of the functions of the Health Department—that the said Board esteems a contemptible act of political spite of more satisfaction to themselves than the protection of the public health. Dr. Crane has subsequently shown, by a summary of the duties of the Health Department, that it will be utterly impracticable to conduct the service efficiently under such a restraint, and that unless some additional appropriation is made, many lives will be unquestionably sacrificed by this disgraceful act of the Brooklyn Board of Estimate.

"**Yellow Fever** in New York" and "in New Orleans" has been announced by the newspapers, but in both places it appears to have been wholly limited to certain infected vessels which have arrived, reported to have been "thoroughly fumigated," but from the circumstance that in New Orleans the disease subsequently recurred on board the same vessel, it is evident she was not disinfected—the terms fumigated and disinfected being by no means synonymous.

We are gratified to know in this connection, however, that the State Board of Health of Louisiana has adopted rational quarantine regulations, in accord with the regulations of the National Board o

Health, and such as, if faithfully carried out, will effectually protect the port without being an embargo on commerce.

Meanwhile the State Board of Health of Tennessee has shown rather extreme sensitiveness against danger from New Orleans, by issuing a prohibitory order againt the reception of merchandise from that city.

The National Board of Health has put into effectual operation a river inspection service, extending from New Orleans to Cairo, with intermediate inspection stations, as the best possible means of protecting commerce, preventing unnecessary quarantine and securing public safety.

Analysis of Higgins' German Laundry Soap.

To the Editor of THE SANITARIAN:

I have thoroughly examined the sample of soap you handed me, and find it to be wholly free from all adulterants, such as plaster-of-Paris, pipe-clay, sulphate of baryta, silica, etc., which are common, more or less, to inferior soaps—nor was there any excess of water.

The alkali used in the manufacture of this soap is of superior quality; the resin and oily matter I also found to be of absolute purity and thoroughly saponified.

I consider it, in all respects, a pure soap.

Respectfully,

July 19th, 1880. G. N. B., *of Col. Col. Sch. of Mines.*

It affords us pleasure to be able to submit the foregoing analysis, which we accept and endorse as evidence of the purity and superior excellence of Higgins' "German Laundry Soap."

Protection from Venereal Diseases.

To the Editor of THE SANITARIAN: DEAR SIR: Will you do me the favor to correct a typographical error on line 21, page 317, of the July number of THE SANITARIAN, where the substitution of the word "honor" for "horror" has destroyed the meaning of the sentence:

"The American Public Health Association will hardly be deterred from its duty by the outcries of a few individuals, who, in their pretentious horror of the recognition by the authorities of the fact of the existence of prostitution, profess a virtue to which their own passive tolerance of the vilest forms of harlotry, in their very midst, demonstrates their flimsy claim."

Permit me also to take advantage of the opportunity to repeat to the several correspondents who have, in good faith, inquired respecting the intention of the Committee of the American Public Health Association, to recommend any system of license for public prosti-

tutes, the assurance that no member of the committee, to my knowledge, has contemplated any such action. The main object of my own paper was to direct attention to the danger from venereal diseases incurred by innocent women and children, and the committee appointed by the Association for the purpose is now engaged in digesting some practicable plan for their protection. The professional prostitutes, who alone would be amenable to legislation, have very generally learned that it is to their pecuniary interest to avoid contamination, and they do not, therefore, actually need protection, but the innocent women, ignorant youths and helpless children, who do not know that such diseases exist, have a right to be defended from this, as from the other hidden dangers, which it is the object of sanitary science to discover.

Very respectfully, your obedient servant,

ALBERT L. GIHON, M.D.,
Medical Director U. S. Navy.

1736 I Street, Washington, D. C., July 14, 1880.

Literature.

Vaseline.—This very useful article seems to have attracted considerably more attention from therapeutists abroad than in this country, where it was first produced; probably because it is here generally known to be manufactured under special proprietary rights, this being enough, apparently, to exclude it from recognition in works on therapeutics and pharmacy, and from medical journals. Notwithstanding, it is now in very general use by medical practitioners, and bids fair ere long, as it merits, to become one of the necessities of pharmacists, whether it is made officinal or not. A brief notice in the *Medical Record*, some time ago, was particularly taken up by *La Farmacia Moderna in Rapporto al Progresso delle Scienze Mediche*, as a text for the fullest consideration of the usefulness of vaseline in pharmacy we have anywhere seen. Among the rest, the favorable opinions of Esmarch and Bardeleben are given. The former uses ten parts of vaseline to one of carbolic acid as an antiseptic unguent for the hands before performing an operation; the latter has obtained excellent results from an ointment of vaseline and camphor in some forms of rheumatism and in obstinate cutaneous eruptions.

Bouchardat, in his Annuaire Thérapeutique for 1878, describes vaseline as a pure, colorless and insipid substance, neutral and without

odor. It melts at 35° Cent. (95° F.); gives dense fumes at 150° Cent. (302° F.); distills at 200° Cent. (392° F.), and burns without leaving a residuum. The continued action of light develops a slight odor of petroleum; it should therefore be protected from the light. It is insoluble in water, slightly soluble in boiling alcohol; it is in part dissolved in cold ether, but entirely soluble in boiling ether. Fatty substances, the essential oils, chloroform, etc., are its natural solvents.

Vaseline dissolves iodine, bromine, phoshorus, the sulphates, phenic acid, benzoic acid, the alkaloids, and in particular strychnia and atropia.

A damp air, salts and metallic oxides and caustic alkalies have no effect on vaseline. It will not turn rancid, nor can it be saponified—properties which distinguish it from fatty substances and make it a valuable excipient for therapeutic agents.

At a low temperature the strong acids have no effect upon it; at a high temperature they destroy it, producing water, carbonic acid, and the various compounds resulting from their decomposition.

Vaseline is obtained pure by mixing four parts of animal carbon in powder with one part of petroleum tar. After remaining forty-eight hours at a heat of 50° Cent. (122° F.), the mixture is placed in a suitable apparatus and washed with boiling ether. This separates the vaseline and falls with it into a receiver. The excess of ether is then driven off by distillation and the product obtained remains at the bottom of the receiver.

Vaseline is not, strictly speaking, a pure hydrocarbon, but rather a combination of hydrocarburet, liquid and solid, all volatile, yet having properties in common which give the characteristic qualities to vaseline.

This article has many qualities which deserve the attention of the physician and the pharmacist. In many preparations it is preferable to lard, to simple cerate, and, above all, to glycerine, which in so many cases irritates delicate mucous membranes.

Galezowski prefers it to glycerine, the glyceroles and all fatty substances, in the preparation of cerates for the eyes, and as an excipient for metallic salts for the same purpose. He first saw it used, he says, by Dr. Lamson in London. He then experimented with it for four months on more than a thousand patients, and declares that the results greatly exceeded his expectations. Among other preparations he recommends the following for granular lids: argent-nitratis, 0.05 grammes; vaseline, 5 to 10 grammes; he has kept this preparation for four months without undergoing the slightest alteration.

Vaseline may be used advantageously in giving consistence to different oils, in dissolving iodine, chloroform, ether and the alkaloids;

thus equal parts of vaseline, chloroform and ether form a gelatinous substance which forms a very active liniment.

In the *Journal de Médecine et de Chirurgie*, formulas are given which have been used with advantage in the Hospital la Salpetrière; as iodide of potass, 2 gr. to 15; acid tanici, 2 gr. to 20; iodine, 1 gr. to 15; camphor, 3 gr. to 10. It may also be used as an excipient for morphine, for phosphorus, and especially for atropine, because it is otherwise kept with difficulty. T. P. C.

Double Crural Murmur.*—This memoir consists of articles published in *L'Union Médicale*, during the year 1879. The subject was first discussed in an exhaustive treatise by Dr. Da Costa Alvarenga: "*Estado da questão ácerca do duplo sopro crural na insufficencia das valvulas aorticas.*" Lisboa, 1863. There is no doubt the author, who has written on diseases of the heart in all their relations, was the first to observe this murmur in the carotid, sub-clavian and other arteries, but his opponent argues that his claim to having discovered it in the crural artery was not made with sufficient explicitness.

T. P. C.

Bright's Disease.—*Do Diagnostico das diversas formas clinicas do Mal de Bright. These de Concurso ao logar de Lente Substituto da secção de Sciencias Medicas, pelo Dr. Domengas de Almeida Martins Costa.* Rio de Janeiro, 1879.—The above is an exhaustive treatise, giving the normal and the pathological anatomy, together with the history of the disease since its discovery; the different forms of the disease and their differential diagnosis, with illustrations. The clinical history of the different forms of the disease is, perhaps, the most valuable chapter in the volume. The table, giving a comparison of the parenchymatous and interstitial forms of nephritis, is remarkable for its methodical arrangement, close and accurate observation, and the clearness with which the propositions are stated. The author himself states that, "With these facts before us, it is easy to establish the differential diagnosis between the two forms." The author, in this work, gives us a remarkable instance of his powers of condensation.

T. P. C.

Veterinary Science.—*Bericht über das Veterinärwesen im Königreiche Sachsen für das Jahr*, 1878. *Herausgegeben von der Königl. Commission für das Veterinärwesen durch G. C. Haubner, Dreiundzwanzigster Jahrgang.* Dresden, G. Schönfeld, 1879.

This annual gives a very interesting and instructive report of whatever relates to veterinary matters in the Kingdom of Saxony. Among

* Réclamations et Réponses.—Question de Priorité, soulevée par M. Duroziez, Relativement à la Decouverte du Double Souffle Crural dans l'Insuffisance Aortique, par le Dr. Pedro Francisco Da Costa Alvarenga. Lisbonne, 1880.

others the chapter on Diseases of the Organs of Locomotion is of special interest. The Museum has been enriched by the addition of over thirty preparations, some of which are of great value, as in 24, the fourth and fifth cervical vertebræ of a horse, showing anchylosis and incomplete luxation; and No. 27, the under jaw of a horse, with incipient anchylosis in the form of fungous arthritis.

In the Veterinary School 4,152 animals were treated during the year; 759 operations were performed, 280 serious, and 479 minor operations. Among the graver operations were 34 for the removal of foreign growths, and 74 for opening abscesses. As a study in comparative pathology, these reports are very instructive: In the District Clinic, of 570 horses treated 32 were for diseases of the nervous system and of the organs of sense; 155 for diseases of the digestive organs; 105 for diseases of the organs of respiration; 62 wounds and swellings; and 111 for diseases of the bones, joints and tendons. In the polyclinic, 40 were treated for nervous diseases; 84 for diseases of the organs of digestion; 133 organs of respiration, and 350 diseases of the bones, joints and tendons. It is remarkable that in the District Clinic no animal was treated for disease of the nervous system except the horse and the dog. It might be interesting to trace the cause of this: in how far it is influenced by the mode of treating these animals when domesticated; the influence of food, air, exercise and the like; and, again, how much do these same causes contribute to the production of the numerous cases of disease of the nervous system, especially in females.

Supplementary to this is a report on the influence on the weather, feeding and other causes, on the health of domestic animals; and another on infectious and contagious diseases, which will well repay a careful study by those who are interested, either as specialists or as students of comparative physiology and pathology.

Scorbutus in animals is a subject but little understood; the salts in the blood have been analysed as follows: 24.445 gr. dried blood contained 1.346 gr. mineral substance, of which 1.1748 = 87.2 per cent. was soluble in water, .172 gr. = 12.8 per cent. was insoluble. The chemical constituents were: soda, 34.4 per cent., lime, 6.4 per cent., chlorides, 32.7 per cent., sulphates, 3.5 per cent., and 8.7 per cent. of phosphates.

A similar analysis is given of the saliva in cattle suffering from parasites. T. P. C.

Wisconsin State Board of Health.—Fourth Annual Report, 1879, pp. liii.–165. This report contains, besides the *General Report of the Board* on subjects of general interest, and the *Secretary's Report* of the methods pursued by the Board in the exercise of its duties, seven special papers: *Homes for the People*, by Gen. I. Bintliff; *Our*

Public Schools, by J. T. Reeve, M.D.; *Our School-Houses*, by Prof. T. W. Chittenden; *Ground Air*, by C. F. Witter, M.D.; *Adulteration of Foods*, by Prof. T. C. Chamberlain; *Inspection of Public Buildings*, by Gen. I. Bintliff; *Typhoid Fever*, by A. J. Schweichler, M.D.; and an interesting chapter of *Extracts from Communications of Special Correspondents*, giving the relation of diseases throughout the State to conditions.

Diphtheria is pronounced emphatically "the scourge of the State." The deaths reported from it for the year numbered 1,234, and yet believed to be far short of the extent of the mortality from this cause. After careful investigation by a special committee, going over a period of three years' prevalence of the disease in various parts of the State, the emphatic conclusion of the Board is—"there is no doubt that its chief harvest-fields are in houses or localities where filth and uncleanliness prevail." That diphtheria may, and frequently does spread by contagion beyond the bounds of intensifying local conditions, is fully recognized, but this does not detract in the least from the danger of *filth*, as its chief and *preventable* cause. Scarlet fever, typhoid fever, measles and whooping cough are next in the category and fatality, and are shown to be closely related to diphtheria, in the conditions favorable to their origin and prevalence. The abstract of correspondence contains many useful lessons illustrating the foregoing conclusions, and the Board is fortunate in having a corps of correspondents so active in promoting its best interests.

Of the special contributions by the members of the Board, severally, they are on subjects which lie at the very root of public hygiene; and, without exception, show a comprehensive knowledge of the results of the best practical work hitherto, and the best means of applying it to Wisconsin. Want of space only forbids well-merited extended notice of every one of these papers, some of which we hope to find room for republication hereafter, entire.

The Medical Register of New York, New Jersey and Connecticut, for 1880–81, is promptly at hand, and welcome as ever, with its improvements year by year. The total of names of physicians registered in the present volume is 5,375—229 more than last year; 214 (in New York) have changed their offices or places of residence.

The special additions and conveniences over last year's edition are: List of qualified Examiners in Lunacy, "Code of Ethics" of the American Medical Association, and "Contributions to the Medical History of the City of New York," by Dr. John Shrady. The volume appears to be about the same size as the last preceding, but contains 44 pages more. The paper and mechanical execution are excellent; and of the nearly 7,000 names registered—Physicians, Veterinary

Surgeons, Dentists, Pharmacists and Nurses—we know not one who would not be benefited, in time and convenience, many times the value of the book, by its possession; it is simply indispensable to all who would know where and when to find the persons whose names are herein recorded, besides a large amount of other useful information connected with their pursuits.

Published under the supervision of the New York Medico-Historical Society. William T. White, M.D., Editor. New York: G. P. Putnam's Sons.

Wood's Library of Standard Medical Authors for 1880.

Venereal Diseases, By E. L. Keyes, A.M., M.D., Adjunct Professor of Surgery, and Professor of Dermatology in Bellevue Hospital Medical College, Consulting Surgeon to the Charity Hospital, Surgeon to Bellevue Hospital, etc.

A Treatise on Foreign Bodies in Surgical Practice. By Alfred Poulet, M.D., Adjutant Surgeon-Major, Inspector of the School for Military Medicine at Val-de-Grace. Illustrated by original wood engravings; translated from the French.

A Handbook of Physical Diagnosis; Comprising the Throat, Thorax, and Abdomen. By Dr. Paul Guttmann, Privat-Docent in Medicine, University of Berlin. Translated from the third German edition by Alex. Napier, M.D., Fel. Fac. Physicians and Surgeons, Glasgow. American edition, with a colored plate, and numerous illustrations. The above are the titles of the four first volumes received of Wood's admirable library series of Standard Medical Authors for 1880. It is scarcely necessary to state they are gotten up in the best style. The first volume of the series is—as some other volumes now promise to be—more than at first undertaken—the republication of Standard Authors, it being a new work; but of this departure there will surely be no complaint, inasmuch as the lesser contributions of this author to the subject have constituted him an accepted authority.

The other treatises, translated from the latest French and German editions, will be specially acceptable to all American practitioners who have not already become familiar with their well-nigh indispensable teachings, in their foreign languages. As an index of the volumes to follow, the series will form a valuable addition to the library of any practitioner. $15.00 the series. New York: Wm. Wood & Co.

Brain and Mind; or, Mental Science Considered in Accordance with the Principles of Phrenology, and in Relation to Modern Physiology,* is a new phrenological text-book which attempts to comprehend recent physiological researches, with the view of showing

* By Henry S. Drayton, A.M., and James McNeill. Illustrated. Extra cloth. One vol. 12mo., pp. 334. $1.50. New York: S. R. Wells & Co.

their relation to, and consistence with, the teachings of phrenology. Although the reader may entertain the more common physiological doctrine—that the mind depends more upon the quality and use of the brain than upon its size and protuberances—he will nevertheless find in this book much to interest him on questions of every-day life, from which he may gather many useful suggestions.

Health and Healthy Homes,* is one of the most instructive books on the subject of which it treats, to the general reader, hitherto published. It opens with an introductory chapter on the voyage of life, as illustrated by Addison's beautiful allegory, "The Vision of Merza"—shows how diseases may be prevented, and to what extent. This is followed by distinctive chapters on: The Human Body; Causes of Disease; Cleanliness and Clothing; Exercise, Recreation and Training; Home and its Surroundings, and Infectious Diseases and their Prevention—comprehending such conditions of individual and household health as may be made useful to all readers, and which everybody should know.

Summer Reading—the Popular Magazines.—HARPERS', SCRIBNER'S, APPLETON'S, ATLANTIC, LIPPINCOTT'S—are veritable holiday numbers, every one, filled with the choicest literature, and necessary to all persons who would participate in and enjoy the pleasures of cultivated society.

Popular Science Monthly stands alone as *the* star of the first magnitude, in having done and still doing more for the promotion of scientific culture and the suppression of literary trash, than any journal in the country.

Publications Received.—Rhode Island State Board of Health Report, 1879; Savage's Female Pelvic Organs; Wood's Library of Standard Medical Authors; Papers by George M. Beard, M.D.; Dosage of Electricity—What Constitutes a Discovery in Science, and a Reply to Criticisms on the "Problems of Insanity;" Prof. I. P. White's Hints Relative to Intra-Uterine Medication; Sympathetic Affections of the Eye, and Diabetic Cataract, Iritis, etc., by C. J. Lundy, M.D.; Transactions of Tennessee State Medical Society, 1880; Robinson's Selection of Spiritual Songs, with Music, for the Sunday-School—Scribner & Co.

---

* Health and Healthy Homes; a Guide to Domestic Hygiene. By George Wilson, M.A., M.D.; Medical Officer of Health for Mid-Warwickshire Sanitary District, and author of "Handbook of Hygiene and Sanitary Science" (fourth edition). With notes and additions by J. G. Richardson, M.D., Professor of Hygiene in the University of Pennsylvania, Member Associé Etranger de la Société Française d'Hygiène. 12mo., pp. 314. Price $1.50. Philadelphia: Presley Blakiston.

THE SANITARIAN.

A MONTHLY MAGAZINE.

Vol. VIII. SEPTEMBER, 1880. No. 90.

LAWS OF INHERITANCE.

By NATHAN ALLEN, M.D.

In a sanitary point of view, no subject is so important to human welfare as that of Heredity. Its laws are primary and fundamental. It constitutes the fountain-head of all social improvement. Hygiene and sanitary agencies are important, but the *quality of the material or the kind of stock* upon which these operate are still more important.

Within a few years much interest has been awakened with reference to the effects on physical organization as transmitted from parents to children, and from one generation to another. As the science of physiology becomes better understood, the inquiry naturally arises, what kind of organization in development, structure and function is best, and what makes the difference? Then, in the matter of disease and health, some individuals and families are always feeble and sickly, while others scarcely ever complain or incur much sickness. They may be equally exposed, and take the same care, but there is all this difference.

One of the first steps in improvement is to inquire into the causes of existing evils. This is especially necessary in all matters pertaining to science. Wherever we find in nature certain differences we should inquire what are the laws that produce them! In all the products of nature and the changes to which they are subjected, there are fixed relations. In nature's operations there is no chance or irregularity, but settled, fixed relations, though we may not always understand them. Such has been the history of science.

In all sanitary work there are two distinct fields of observation —one that pertains to the causes and prevention of diseases that arise external to the body, and the other to those diseases, or predispositions to disease, which are inherited. There are also weaknesses or liabilities to disease included in the same class. In the former are found those diseases traced directly to bad ventilation, impure water, improper food, too much or too little exercise, carelessness in clothing, exposures to infectious and contagious diseases, etc. In the latter field is found a large class of inherited diseases—the germs, the predispositions, the liabilities are transmitted. In the work of sanitary reform too much attention has been devoted to the external field, and not enough to physical organization itself. The more this

whole subject is investigated, the more importance shall we attach to those great underlying laws of *heredity*. To this feature in the work of sanitary improvement we would call attention in a few remarks.

The fact that there is a class known as hereditary diseases is admitted by the oldest medical writers. In the early history of Greece and Rome we find frequent reference by different writers to the resemblance between children and parent, and occasionally mention is made that certain diseases were transmitted. But near the close of the last century, when a correct knowledge of the anatomy of the body in a diseased state was discovered by dissection, the *causes* of diseases became far better understood. The study of pathology has thrown a vast amount of light upon this subject. When this study is pursued with more particular reference to the physical qualities transmitted from parent to child, the laws of inheritance and human responsibility will be far better understood than they now are. The symptoms of some diseases, such as scrofula, syphilis and consumption, are so positively marked that their transmission cannot be called in question. These may be transmitted in the blood or in the form of tubercular deposit. Several diseases near akin to scrofula, such as rickets, cancer and malignant tumors, are thought to have an hereditary origin. Also gout, erysipelas and rheumatism arise more or less from the same source.

But there is a still larger class of diseases where the seeds or germs are transmitted, requiring only time or occasion for development; or where the defect is in the organization itself, so that under certain circumstances, or exposed to certain influences, diseases of structure or function will inevitably be generated. In Books, these are denominated "predisposing causes." The fact is well established that in case of a great predominance of any parts or organs of the body, a certain class of diseases are more likely to follow. If the brain and nerves greatly predominate over other tissues, neuralgia and affections of the head will follow. So fixed is this relation between organization and disease, that the particular class of diseases to which an individual is liable may be predicated beforehand. The reason why diseases originating from hereditary sources—and we add also the laws of inheritance—are not better understood is because we have no typical or normal standard of physical humanity. The causes and prevention of disease have been altogether too much studied outside of the body, and not enough in those *agencies* that are constitutional and inherited. If we had constantly set before us a universal law, or, in other words, a normal standard of organization, it would aid us to understand far better many things about the human system.

Now, has not nature established such a standard? Is there not abundant evidence of it? We might furnish a volume in proof and illustration of the doctrine, but must be content in suggesting here only a few points. If there is one type or organization found in nature better than another, may there not be one better than all others? If in a single instance, or in a number of cases, we find a law or laws of heredity established, does it not imply that there may be a general law or some standard from which they originate and by which they can all be tested and classified?

This normal standard of physiology is nothing more nor less than a general law of health, of longevity, the greatest amount of happiness, of human achievement, and of what lies at the foundation of all these, the *law of increase*. It is based upon the perfectness of structure and function; or, in other words, that every organ in the human body should be perfect in structure and that each should perform its legitimate functions in harmony with others. Taking this, then, as a standard, we have a guide or type by which all changes in organization may be tested.

This law applies not only to the human race, but extends throughout the whole animal and vegetable creation. But nowhere in nature do we find perfect human standards—only approximations towards them—the deviations being almost endless in variety. As "like begets like"—here comes in the law of *heredity*—and as two distinct agents are concerned in the union, the hereditary effects become more varied and complicated. If the organization of both agents or parents was perfect or very near alike, we should find the law of likeness or resemblance more generally exemplified in their offspring. But in this union of the sexes, the results depend much upon several conditions, such as age, mutual adaptation, the health, the physical and mental state of the parties. There are also some other conditions which modify this law of human increase, such as food, climate, exercise, etc., though these are mostly external, and exert their influence after the birth of the offspring.

It may seem at the first thought, in the blending and mixing up of so many dissimilar qualities, that weaknesses, defects or diseases could not easily be traced from child to parent or through successive generations. It may be difficult in some cases, but then in proportion as these deviations or peculiarities are marked or predominant in organization, they are more likely to be transmitted, and perhaps in an intensified form.

The question may be asked, if this hereditary influence extends to every internal organ, and to every tissue in the system? It undoubtedly does, even to all parts of the brain. Thus the ground-work of mental qualities, moral sentiments, propensities, social and domestic attachments is transmitted.

It will be observed that the most prominent feature in this normal standard is *harmony* or *balance* of organization. Every organ is capable of doing its own work, easily, in the best possible manner, and in the performance of its functions it does not interfere with or hinder others. This is the secret of good health and long life. In this case the "wear and tear," or the demands which nature makes to support life, and carry on its operations, comes upon all the organs alike.

In some respects the body may be compared to a perfect machine, made up of many complicated parts. How different is the working or running of such a machine from one imperfectly constructed and unequally balanced in its parts! The one seldom needs repairs, the other, constantly. The one will last, as it were, for an age; the other is entirely worn out in a short time. But in the human body we have something more than mere *mechanism*—we have an organized living being, with the most delicate and complicated parts wonderfully exposed, and when once radically injured, or broken down, they cannot easily be repaired.

Taking this normal standard as a guide, we see that wherever there are extreme developments—where a certain organ, or class of organs, are relatively too large or too small, causing a want of balance or harmony of action in the system, there must be, in the very nature of the case, far greater liability to disease. For wherever these abnormal developments are carried to extremes, nature's laws are more frequently violated, and hence arise some of the most fruitful sources of disease. It is in this imperfect, ill-balanced organization where we find not only the greatest amount of sickness, but that which is most obstinate in treatment and fatal in its results.

It is a well-established fact in pathology that whenever any part or organ in the system becomes diseased, other parts or organs in close proximity, or through sympathy, are soon affected, thus extending the disease. Sometimes, if the part affected is important, or is a vital organ, it may be sufficient to cause death, perhaps suddenly; whereas, large parts of the body are comparatively sound, or so little affected that the individual might, as far as these parts were concerned, have lived many years, if not to a good old age.

n the other hand, the greater is this harmony or balance of organization, or the nearer one approximates to this normal physiological standard, we find not only less disease, but far greater power in nature to throw off or resist disease. The fact is well known to physicians that there is a surprising difference in patients, as to what are called "the recuperative powers of nature." This difference in vitality arises, in a great measure, from the source here mentioned.

The primary object of hygiene is the prevention of disease; but how or where can it be so effectually prevented, or upon so large a scale, as by a proper observance of hereditary laws? By applying hygiene or sanitary agencies in the matter of ventilation, drainage, pure water, etc., we only cut off some of the branches of this upas tree; but by strictly observing hereditary laws, we eradicate or destroy the roots of disease. It is much easier to dry up the springs or cleanse the fountain than to check or purify large flowing streams filled with feculent matter. While more and more attention should be given to sanitary agencies, those fruitful sources of disease *within the body*, arising from violation of physical laws, should not be overlooked.

Within a few years much interest has been manifested in the laws of heredity. The subject has been discussed in books, in journals, and by the daily press. All admit, in general terms, its importance. Some consider it as not only the most prolific source of disease and insanity, but that it constitutes a primary cause of much of the pauperism and crime of the present day. And what is significant, those who have given it the most thought and consideration attach to it the greatest importance.

If the hereditary influences already brought to light seem to possess so much value, may not these agencies, when better and more fully understood, possess a value and an importance that has never been conceived? What is needed for this purpose more than anything else, is some general law or principle as a guide—a normal standard, perfect in itself and universal in its application. Nature has, we believe, established such a standard, with agencies and con-

ditions which can be understood and applied. It will be found that man has a far greater control of his health and life than has been generally supposed.

Near the close of the last century attempts were made to improve the quality of domestic animals. In process of time it was found by experiments that great improvements could thus be made, and, by following up these measures, the most surprising changes have been effected in almost every class of domestic animals. For a century or more have these improvements been carried on, and never more successfully than at the present time. All the results reached go to show that these changes are governed by law, and that there must be, in respect to the animal creation, a general law, or a normal standard of organization.

The same physical laws that govern the animal kingdom apply also to man, under different conditions. Man is a free moral agent, governed by reason, not instinct. He is accountable directly to his Creator for the use of all his powers. He is accountable, moreover, for what he might be, as well as for what he is. God has wisely ordained the family institution for the best interests of the race. While accountability to his Creator and duties to the family and his fellowmen are paramount, they do not annul or suspend physiological laws. With these two objects in view, the observance of these laws on the part of man becomes more important and sacred.

This physiological standard has a wide range of application. It helps us to explain some things which have been difficult to understand. It throws much light upon genius in its varied developments, upon great versatility of talent, upon marked eccentricities of character, upon insanity in its almost endless forms, etc.; also upon the defective classes, as the blind, the deaf and dumb, the idiotic and feeble-minded. By a careful examination of all these anomalous cases, in searching for the causes and comparing them with one general standard, we may obtain valuable information.

The "intermarriage of relations," in its good and bad results, has puzzled many writers; but its peculiarities and apparent contradictions can in this way be very satisfactorily explained. Closely connected with this topic are two others, designated "cross-breeding" and "breeding in and in," the peculiarities of which can thus be explained. This normal standard will enable us to understand better the physical peculiarities and differences of people belonging to different tribes, races and nations; and, also, some singular differences or changes in population, in its increase and decrease; in its birth and death-rate, and other things.

The greatest blessing an individual can have in this world is a sound, healthy, well-balanced constitution, which can be obtained only from sound, healthy parents. On the other hand, the greatest misfortune that can befall one, is to inherit a body feeble, ill-balanced and predisposed to disease. No language can describe the advantages and disadvantages which, from this one source, must attend these two persons through life. Whether we consult the interests of the individual, or of the community at large, there is no knowledge, in a worldly point of view, so important or so valuable as that of the laws of inheritance.

But the main benefits of such knowledge will be reaped by those

who come after us. These advantages will accumulate as they extend from one generation to another. There is a duty, an obligation, a responsibility that we owe to the future which should be seriously pondered. To discharge these duties properly the laws of inheritance must be correctly understood. Our first inquiry, then, should be, what are those laws? What is the source, the fountain-head, the standard from which they emanate? It is simply, and nothing more nor less than that standard in nature which God has established and commanded His creatures to imitate.

Man Destroys, Nature Economizes.—Mr. Marsh, in his most interesting and instructive book, "Man and Nature," shows how spendthrift man has, by his ignorance and neglect of the laws of nature, ruined for the purposes of habitation large portions of his fair inheritance on the surface of the earth. The shores of the Mediterranean exhibit to-day, in many places, desolation not due to political or national decay, but to man's reckless abuse and wanton destructiveness. Although this may be excused to some extent by the ignorance of former days—for study of the relations of nature to man is of very recent date—there can be no excuse, in our more enlightened time, when knowledge of all kinds is so accessible, for not only abusing inanimate nature, but for expelling from the earth so many of our living fellow-inhabitants. We are not only forewarned by our present knowledge, but we have reason to believe that earnest study would in a few years reveal to us many of the now secret and hidden operations of nature. We know, for example, little of the mysterious arrangements by which nature disposes, after their brief life, of the countless birds and animals born into the world. Many millions are born annually; as many millions must annually die. We see the smaller birds occasionally siezed and devoured by the birds of prey; we know that the fox, the weasel, the wildcat, and the mink live largely on birds; but this does not account for their mortality. How rarely we come across dead birds or animals in our walks through the woods and fields! Nature is the most decorous of sextons. She lays her countless dead to rest in the bosom of the earth noiselessly, and with no trace to offend our senses or our feelings. Perpetual birth, youth and renovation are her monuments in her everlasting cemetery. Man lives surrounded by her living forms; she gives him little or no hint of the mortality of her children. It is from his own lot and his imperfect dealings with his own decay that man derives his sad lessons and painful associations with mortality.

As we rarely know individuals in animal or bird life, these races seem in nature's arrangement immortal. The spring brings them to us with the certainty and freshness of new leaves and flowers. We see the leaves and flowers decay; but, as a general rule, we have little consciousness and scarcely any knowledge of the death and decay of animated nature. Could we know this, we could greatly enlarge our power of dealing with the animal race, with every probability of increasing their numbers and the average duration of their lives.—William Minot, *in International Review for August*, 1880.

EPIDEMICS.*

By Sir Joseph Fayrer, K.C.S.I., L.L.D., M.D., F.R.S.

We are now entering on our thirtieth session, and, I trust, with reason to believe that our progress is satisfactory, and our work such as to prove that the Society is fulfilling the main object for which it was founded. Though not one of the largest, it is certainly not one of the least active or important among the medical societies of the metropolis, whilst the cosmopolitan range of subjects embraced within the scope of its inquiry renders its proceedings of far more than mere local interest.

The *raison d'être* of this Society is the investigation and development of our knowledge of disease in motion. It involves much, for any disease where it spreads, whether among the people of a house, a ship, a village, a city, a province or a continent, is an epidemic, and comes within the scope of our inquiry. Dysentery and malarious fevers are typically *endemic* diseases, but in India they may and do at times assume a dangerously epidemic character. But it is not meant that our inquiries should be restricted to mere epidemicity alone; we cannot advantageously study one phase of the natural history of disease and exclude others. There is so much in etiology, semeiology and pathology, both human and comparative, that concerns our department of research, that we may not ignore the means by which we gain the most important of all information to the epidemiologist—namely, the means of discriminating one form of disease from another. Therefore, though our proceedings will naturally refer mainly to epidemic disease, we shall thankfully receive and carefully consider all information that may tend in any way to throw light on the causal relations, and on the influences exercised by climate, season, locality, food and occupation on the genesis and dissemination of all diseases, not excluding those of the lower animals, nor even of plant life. I might illustrate this by referring to the importance of discriminating between the different forms of fever that occur in India. It is well known that the greatest proportion of mortality in India is ascribed to fevers. The highest death-rate† was registered in Bombay, where it equalled 20.82 per 1,000; in Madras the deaths of 469,241 persons gave a death-rate of 10.08 per 1,000. Both here and at Bombay, however, the mortality recorded was greatly aggravated by famine.

There is no doubt that, under the heading Fever, many deaths from other causes are recorded, and we may probably refer a large proportion of them to diseases of an inflammatory character, affecting the thoriac or other viscera, or to complications involving inflammatory action elsewhere. In a vast country like India, where the population is so extensive, and the means of registration of necessity limited, of-

---

* Abstract of Presidential Address at the Epidemiological Society, delivered on November 5, 1879.

† *Vide* Report of Sanitary Commission of the Government of India for 1877.

ten not under medical supervision at all, it is not to be expected that greater accuracy can be ensured; but, were it possible to discriminate among the various forms of disease returned as causing the mortality by fever, we should have a very different result from the present. One can hardly refer to this subject without expressing admiration at the great progress that has been made of late years in registration under the direction of the sanitary authorities of India, and confidence that it will continue to improve, and render the statistics more valuable even than they are now. Of course, where the registration of death is not subject to medical definition, discrimination between the various forms of fever or other death-causes could hardly be expected; and therefore the example I have just given is hardly so good an illustration of what I refer to as typhoid, for which we have accurate medical statistics of our European troops in India. It is within my recollection that attention was first called to the existence of this form of fever in India, and yet there can be, I suppose, no doubt that it has always been there. It soon became generally recognized as a new discovery in India, and people wondered how it had escaped observation hitherto, whilst some perchance regarded it as a new disease. But it was just this power of discriminating observation that is so rare and so valuable that had been wanting; it was this that, exercised by Budd, Jenner, Stewart, Murchison, and others after them, established a new era in the nosology of fevers in England; and it was this that, a little later in India, discriminated between certain forms of remittent and enteric (*i.e.*, between malarious and specific) fevers, and that will, I hope, ere long further discriminate and rearrange the nosology of fevers in India and the tropics.

Now, typhoid or enteric fever is an important cause of mortality among our young European soldiers in India; and it raises or suggests questions of great importance in regard to them—such, for example, as the right age, time and seasons for sending them to India, to say nothing of the hygienic questions as to sanitary measures arising out of its causal relations. The Sanitary Commissioner's Report of 1877 says that out of 233 cases of typhoid, 92, or 39 per cent., proved fatal, the admission rate being 4.1 per 1,000 of strength. It moreover appears that 2.45 per cent. occurred at or under twenty-four years of age; 1.55 at twenty-five to twenty-nine; 0.99 at thirty to thirty-four, and a few or none above that age, showing that the disease tells most severely on the younger men—in this respect resembling typhoid in England. Again, Bryden, in his Report of the Statistical History of the European Army in India up to 1876 (published 1878) says: "It has no geography; and it is a matter of popular observation that no regiment or battery escapes enteric fever *in the first year*, whatever cantonment of India may be selected." "Out of seventy-three bodies of men two regiments and seven batteries only returned no case of enteric fever in the first year." And he gives the following analysis of 368 deaths that occurred between 1823 and 1876:

Ages.	Total deaths.
24 and under	255
25 to 29	90
30 to 34	17
35 to 39	4
40 and upwards	2

Seventy-five of these deaths occurred within three years after landing in India, and 94 per cent. of the total were among men under thirty years of age. In a memorandum received only a few days ago Bryden says, out of 132 deaths form enteric fever in 1878, 90 occurred in men who had been under twenty-two months in India. All this shows that youth and the first year of service in India are the great predisposing causes.

Now is this the same disease as that which might be contracted in London, Dublin, Windsor, or elsewhere in a town or barrack? from a water-closet, drain, sewer, well, or it may be, from a milk-can? I have little doubt that very frequently it is exactly identical; but I believe also that perhaps as frequently, or more so, it is not; and this, I believe, not in regard to young European soldiers only, but of the whole population of India. In short, I am, and long have been, of opinion that a form of fever exactly like European typhoid, except in its etiology, exists in India and other hot and malarious countries; and that it is due to climatic causes, not to filth or specific causes such as give rise to it in England and elsewhere, and recent reports from India and other parts of the world seem to show that this view is gaining ground.

Be it clearly understood, however, that I do not for a moment dispute the existence of genuine *filth* typhoid in India. The official returns, which cannot be gainsaid, and my own experience alike leave me in no doubt about it. But I do believe that many cases now recorded, and rightly recorded, as typhoid in India, are not caused by the same specific agency as that which gives rise to typhoid here, and also in India, where the necessary conditions are present. There are, in fact, two, perhaps more, forms of typhoid, or perhaps, I should say, different causes for a disease presenting the same phenomena, one being specific, the other climatic; if so, it is obviously very desirable to discriminate between them—not merely as a matter of nosological or pathological interest, but in regard to the hygienic measures that are necessary in either case. This question is of great interest to epidemiologists, and is just one of those subjects that should come within the scope of our inquiry. A remarkable instance occurred near London lately, where an *epidemic* of typhoid was traced to its origin along the track of a particular water-supply by a distinguished member of our Society. Our lamented colleague, Murchison, also traced a similar outbreak to contamination of milk by polluted water. The explanations of these outbreaks were exactly in accordance with these views, no doubt rightly held in Europe. Typhoid in India, however, would not always be similarly explained.

We know but little of the nature of the causes of epidemics such as cholera, or of malarious diseases, but we know something of what may be expected in regard to them, when and how they will appear, and how sanitary work may be made most effectually to avert, prevent, control, mitigate, or remove them; nor is it too much to say that we hope, if not to banish or stamp out, at all events still further to mitigate their ravages. This, I think, is warranted by experience, for certainly the past twenty years have witnessed great progress, and we already see that not only is the value of life increasing, but that the virulence of, and mortality caused by, epidemic disease

are being controlled, whilst the vexatious and purposeless restrictions and restraints of quarantine are diminished if not altogether removed, in our dominions at least. Science that has enabled us to reduce the death-rate among our troops from 17.9 to 8.56 per 1,000 in Europe, and from 69 to 17.62 per 1,000 in India, speaks for itself, and were there no other result, this alone is a triumph such as has been achieved by no other department of knowledge. Pray, do not suppose that I claim all this for Indian workers. We all know that these great steps in social and sanitary progress began here, but I do say that the torch then lighted has since been worthily and firmly borne in Indian hands.

This Society, young as it is, can remember the commencement of systematic sanitary work in the East, and may claim some share in the origination of the good work; for among its earlier members were some who advocated the study of epidemiology and hygiene in India. I cannot now stay to dwell on this, but I may say briefly in regard to its progress and work that until the sanitary department was formed, less than twenty years ago, comparative, I might almost say complete, ignorance on the subject of epidemics, and of the diseases that prevailed among the people, existed. An epidemic might carry off thousands, but we knew not where it commenced, where it ended, or what area it occupied. Now, thanks to the continued and careful statistics, we know all that and more, with fair accuracy, and are gradually collecting facts which make the study of epidemiology possible. Before organized sanitary work in India began our knowledge of the general population—nay, even of the European troops and prisoners—was most imperfect. Now, thanks to that department, and especially to Bryden, whose name cannot be too prominently mentioned in connection with the subject, we have, in his most elaborate and valuable statistical reports, facts and figures, as well as deductions, which deserve the closest attention. We have, in short, the most complete details of sickness and mortality in all classes over the whole of India. It is impossible, however much any one may differ from his conclusions, not to recognize the great value of his work, for these reports contain a vast and continued array of authenticated facts which will serve as a mine of information to epidemiologists; and there is every reason for believing that it is but an earnest of more, for if, as Bedford said, the circumstances of India were such as to favor the acquisition of knowledge in 1850, when the precise conditions of life of the population generally, and even of our troops and prisoners, were imperfectly known, what must it be now when a system of observation, carried out by a body of trained observers under a head such as he contemplated, is in full and daily improving operation? One can only wish that, considering the magnitude of the work, it were more extensive still, and that observations, already of the greatest value, could be rendered still more so by being concentrated on certain limited areas, so as to enable the inquiry to extend to details with a precision that at present can hardly be practicable. The results of epidemiological knowledge and sanitary work are seen in the effect already produced in reducing the mortality from cholera and other epidemics, and from malarial fevers. For instance, among our European troops, the circumstances of which are well known, there has been the following alteration in the general death-rate:

1861 to 1865	9.02 per 1,000.
1865 to 1870	6.98 "
1870 to 1875	3.23 "
1875 to 1876	2.3 "
1876 to 1877	·84 "

And it can be shown from the same source (Bryden) that there is a similar reduction in the death-rate among native troops; and that, during the great cholera epidemic that prevailed in 1876, the death-rate among the civil population being 12.12 per 1,000 (it was the famine year), that of the European troops was 1.75 and of the native army 2.2 per 1,000. Also that in the death-rate of that great scourge of India—fever—there has been an equally happy result, as shown by the death-rate of a period of nine years—from 1868 to 1877—in the Bengal and N. W. provinces jails, as against a mean, in nine years ending 1867, of 22.41.*

	Per 1,000.		Per 1,000.
1859	13.76	1868	2.84
1860	49.19	1869	4.57
1861	38.14	1870	6.20
1862	30.81	1871	5.81
1863	25.44	1872	1.92
1864	29.96	1873	1.56
1865	7.65	1874	2.67
1866	5.23	1875	3.50
1867	3.12	1876	1.26
Mean	22.41	Mean	3.29

In India, as elsewhere, the purpose of epidemiological study is to observe accurately and to interpret the import of the facts—*i. e.*, if possible, to elucidate the laws of which they are the expression—and thus to form a scientific basis on which to direct sanitary work, which itself is the practical outcome of such observation, and concerns itself but little with theories. Those who have to do with it know how difficult it sometimes is to obtain *reliable* observations, such is the difficulty of excluding the bias of preconceived theory of the nature of the subject under investigation. Our Society, however, must hold the balance, and deal with theories as well as facts. No doubt the explanations sometimes are conflicting. Happily, in the practical mode of dealing with the question, there is not much conflict, and it is remarkable how little different is the action of those who hold opposite opinions on the causation of disease. As to the different views that are held in regard to fundamental questions regarding the genesis and diffusion of disease, let us hope that we may, perhaps, here contribute something towards their adjustment.

In illustration of the state and progress of epidemiology in India, I might select the history of any of the great epidemics that have occurred of late years, but it would be impossible, in the short space of time at my disposal, to do this completely. I shall, therefore, confine myself to a few remarks on cholera, as it, though far from being the most destructive, is the epidemic to which most interest attaches.

The theory that cholera is purely of Indian origin, and that where-

* Bryden's Report (1876), p. 157.

ever it may appear it is to be traced back ultimately to the Delta of the Ganges, is disputed by some who see in history evidence that it had long been existing in other parts of the world, and that it was described by the earliest writers—Sanscrit, Greek and Arabian. I may here just remark that the name "haida," or "haiza," used by Rhazes nearly 1,000 years ago in describing the symptoms of cholera, is the same as that applied to it now by every Hindustanee-speaking native of India. As to its presence in India, from earlier periods we have descriptions by Correa, d'Orta, Bontius and others, beginning from 1503. An epidemic of it in and about Goa, in 1543, for example, is described by d'Orta, giving all the characteristics that distinguish an epidemic now. He calls it "moryxy" and also "haiza." It is described by a continuous chain of writers as occurring in various parts of India, in the interior as well as on the coast, up to the seventeenth century, when, after being quiescent during the latter part of the eighteenth and early part of the nineteenth century, it broke out with great virulence in Bengal, and has remained there ever since, in what Bryden calls its endemic area, whence it spreads, according to certain laws, which are being worked out with admirable patience and intelligence by this distinguished statistician. I cannot now trace the history of cholera in either East or West, nor refer even to the numerous authors who have described it. For full particulars on this subject I refer you to Inspector-General Dr. J. Macpherson's learned work, "The Annals of Cholera."

I need hardly insist that cholera is not a new disease, or that it did not, as by some supposed, make its first appearance as an epidemic in Jessore, in Bengal, in 1813; though no doubt since that period it has been more closely investigated and described. All seems to show that it is the same now as formerly, and that though we have gained much knowledge of its natural history of late years, yet we are as ignorant as our predecessors of its real nature. We have, thanks to sanitary measures, disarmed it of some of its terrors, and have diminished the mortality it caused; but as to treatment, we have gained but little, though the empiricism of to-day is more scientific than it was in former days. We do not now burn our patients on the soles of the feet, tie ligatures round their limbs, or have recourse to other senseless barbarities; for we find that simpler and more rational methods are of greater avail, more or less, according to the period of the epidemic at, and the promptitude with, which the remedies are applied. But we have learned that local causes have a potent influence, and that cleanliness, good air, *pure water* and free ventilation are all-powerful opponents of cholera; that we can predict its appearance and avoid it in certain places; and that it is not to be controlled by quarantine or sanitary cordons. And from the earnestness and intelligence with which the subject of its etiology is pursued, it is not improbable that sooner or later it too will be made out. We shall then be in a position to say, not only what it does or will do, but what it *is*. Meanwhile, we must go on observing and investigating. It is satisfactory to know that we are daily learning, practically, better how to deal with it, and how to modify its cyclical intensity and avoid its ravages. For my own part, until I know something more of the *nature* of the cause—be it a material poison, aerial or telluric, a miasm, or a dynamic agency that so perturbs the vital energy,

I cannot see my way to formulate a definite theory either of the nature of its origin or the method of its diffusion. I find the highest authorities at complete variance on the subject, and reposing faith in theories diametrically opposed to each other. Some explain all the phenomena by contagion—*i. e.*, communicability in some way of a *materies* or germ from one person to another. Cholera, they say, is the result of infection by a poison derived from the intestines, and water or air, but especially water, is the channel through, by, or in which the infective material is intensified and conveyed. These arguments are supported by an abundant array of facts, and have been maintained by men whose very names carry conviction. Others reject altogether this explanation; they insist that local influences are all-important, and deny that the spread of cholera is due to human intercourse, that there is any poison transmitted by the excreta, or that the disease is in any way communicable from one person to another. They admit the existence of a poison of some sort—a miasm or an influence, though of its nature they are ignorant. It is a subtle thing that travels in certain directions in obedience to certain laws, is influenced by atmospheric and telluric conditions, and where it finds certain local conditions, and the people prepared by them to submit to it, there cholera will prevail. They deny the efficacy of any enteric or specific poison in the water to produce it, though they attach the greatest importance to the purity of water from *all* organic contamination, impure water being one of the local conditions which, if added to crowding, filth, or other insanitary conditions and want of proper ventilation, is that *of all others* which favors cholera. Such are the principal theories of the disease as they are supported by fact and argument which appear convincing. Europeans, Americans and some authorities in India maintain the contagious views, whilst high authorities in India adhere to the opposite theory, and declare roundly that the facts of cholera, in India, at least, are altogether opposed to the contagion theory.

On the question of importation of cholera in the Punjab epidemic (1875–6), and its spread by human agency. Dr. Bryden, in his report, p. 308 (1876, published 1878), says: "The assertion amounts to this: The Punjab is divided into thirty-two districts. Cholera was introduced into seventeen of these in 1875, and therefore it spread. Cholera was *not* introduced into fifteen districts, and therefore did not appear, or, if it was introduced, influences of which we know nothing stopped its propagation in these districts. Unknown causes prevailing in the one-half of the area are presumed to influence the human system so that it is capable of receiving cholera, and in the other to act universally as an antidote even to a cholera poison when introduced. This is what is offered as antagonistic to the theory which asserts that cholera is air-borne and is as far-flying as are the limits of natural areas. Primarily, these theories cannot be reconciled; the one or the other is false. If cholera is spread only by the human being, the theory which shows it to be air-conveyed is untrue; if cholera is spread solely as an aerial miasm, then the theory which recognizes only the effects of human intercourse is unfounded. The most that is admitted by the advocates of the human theory is, that the subjection of cholera to meteorological agencies is absolute, and that these influences can, and do operate so as to do away altogether

with the effects of the poison, although imported. They do not recognize the entity *minus* the human being. The antagonistic theory, while holding, as opposed to demonstrable fact, the statement that cholera moves only by human agency, may, if necessary, be extended in its scope so as to embrace the other; that is to say, the inquiry is left open as to whether or not the cholera entity, after being aerially distributed, may be subsequently propagated or spread by man. In the theory which connects cholera solely with man there is no such extensibility. Human intercourse must explain every fact of spread and propagation, and nothing is left to the play of natural agencies. Human intercourse, giving the widest scope to the signification of the term, cannot pretend to account for any fundamental phenomenon displayed during the progress of epidemic cholera; and, therefore, I assert the theory to be radically untrue as applied to the behavior of cholera in India. I do not say that the above statement will hold true all over the world; and, even as applied to India, the theory does not preclude the possibility that cholera may be conveyed by the human being. Naturally the recoil is to the opposite extreme. The bold statement that cholera is never spread over an area unless human agency intervenes, is apt to be met by the equally dogmatic statement that cholera is as pure a miasm as malaria, and as little amenable to the control of man."

In the present state of our knowledge, we can only be guided by the inferences from well-ascertained facts and such laws as we have ascertained to be in constant operation, watching and carefully observing, until we may, were it only by a process of exclusion, arrive at some deeper knowledge still. "So far," says the chief sanitary authority in India, "the history of cholera is full of enigmas and seeming contradictions, and though we have of late years collected many valuable data, and understood the importance of studying them on a broad basis, we know no more of the exact cause of the disease than our grandfathers did. We know that, whatever the cause may be, it flourishes in the midst of insanitary conditions of dirt and overcrowding, and especially of impure water, impure from whatever cause; we know that it is liable to occur under certain conditions, and at certain times and seasons, and we should endeavor to extend that knowledge, and hope, as we do so, to arrive at the precise nature of the disease itself." But it may be well to remember that "expenditure of public money must take place only on observed facts and experience," not in accordance with theories. "It would be prejudicial to real sanitary work if opinions which have been promulgated in some parts of India, as to the cause of cholera being due *solely* to the state of the water-supply, were to take root."

It is most important that we should arrive at some definite conclusion as to the real nature of the disease, for it is impossible but that our conceptions on this subject must influence the sanitary measures that deal with it, and I believe the question must find its final solution in India, where the disease is always present in its endemic and seldom absent from the epidemic areas. The highest authorities —for both I have the greatest respect—differ *toto cœlo* on this subject. Is it that they are both right, though seemingly so opposed in their views? Like the knights who fought about the silver and golden sides of the shield, will they not change places, and find why they differed?

I would venture to suggest that in India the inquiry might be pushed with more detail in regard to individual cases and outbreaks in certain limited areas; and that, on the other hand, one or more epidemiologists of European fame should be deputed to visit India and study cholera with the eminent men who have devoted so many years of close attention to it there. It might be, I believe it would be, that mutually they would gain from each other, and that those who went out would find their own views confirmed as to the disease in Europe—modified as to what they deemed it to be in India. Of one thing I am convinced, that simple truth is the object of their search; and I feel sure that from such combined action the greatest benefit would result.—*Nature.*

A Singular Explanation of the Cause of London Fogs.—We glean from the London *Architect* that Dr. Frankland, a chemist of high repute, has just concluded an investigation into the cause of the persistency and irritating character of the fogs with which the vicinity of London is particularly afflicted.

Dr. Frankland's conclusion, as given in our contemporary, is highly interesting and singular. He finds that the fogs occur in comparatively dry air, and that they cannot therefore be considered as a sign of dampness. Their persistency in a dry atmosphere he has found to be due to a coating of oil, derived from coal smoke, upon the surfaces of the minute vescicles of water composing the fog, and which effectually hinders the evaporation of the water. The discharge of such oleaginous matter into the atmosphere in immense quantities, by reason of the incomplete combustion of bituminous coal universally employed as fuel, is quite comprehensible; but that it would have the effect above noticed, is a singular and unexpected operation.

Dr. Frankland is further credited with the assertion—the rational conclusion of his observation—that by substituting smokeless coal, coke or gas in place of bituminous coal for firing purposes, the fogs of the city would be things of the past.

We look upon the foregoing statements as highly interesting, but cannot help thinking that Dr. Frankland's observation has been somewhat overdrawn in respect to the conclusions our authority draws from it. Dr. Frankland's statement, as we have it, is that the persistence of fogs in a dry medium is due to the oleaginous impurities present in the air of the city; and this statement appears to be very reasonable, but it does not warrant the succeeding statement that the substitution of other forms of fuel for bituminous coal would entirely do away with town fogs. These are caused by climatic influences beyond the control of the people and their domestic habits, these latter serving, as Frankland is careful to state, simply to aggravate the nuisance by causing its persistence when it would otherwise have disappeared. While the suppression of bituminous coal fires might therefore be expected to lessen the evil, we feel quite safe in saying that Dr. Frankland would not venture to affirm that London's fogs would cease, for London fogs were matters of history long before bituminous coal was known or used within her walls.—*Manufacturer and Builder.*

A FEMALE CRUSOE.

AN INDIAN WOMAN EIGHTEEN YEARS ALONE ON THE ISLAND OF SAN NICOLAS, OFF THE COAST OF SOUTHERN CALIFORNIA. PHYSICAL CONDITION GOOD; RECOLLECTED EVENTS, BUT HAD LOST ALL KNOWLEDGE OF THE COMPUTATION OF TIME AND THE DIALECT OF HER TRIBE.

By ABSALOM B. STUART, M.D., Santa Barbara, California.

I well recollect with what boyish pleasure and absorbing interest I followed Robinson Crusoe in his lonely travels and daily occupations on the island of Juan Fernandez, little thinking that in later years I would find a similar case on this far-off coast; but such is the fact, and my narrative is not only based upon facts, but is fact, the knowledge of the circumstances having been obtained from the discoverers, captors and the attending physician during the last sickness of my feminine "Crusoe," the heroine of San Nicolas Island.

Having heard that an Indian woman had lived a lonely life of eighteen years—from 1835 to 1853—on one of the many islands off this coast, I was anxious to learn more about it than the varying and contradictory reports in general circulation gave me, but was unable to do so until about two years ago, or a short time previous to the publication of my first article on this subject, much of which is here rewritten, when in person I visited Mr. George Nidever and Mr. Chas. Deitman (usually called and known by the name of "Charley Brown"), two of the party which brought her from the island to this place, and Mrs. Nidever, who had charge of her after she landed. Mrs. Nidever was consulted through an interpreter conversant with the Spanish language. Mr. Nidever is well advanced in years, seventy-eight, but retains his faculties to a good degree. A frontiersman from early life, he spent many years as trapper and huntsman among the Indians of the Northwest previous to coming here in 1835. He became expert in the use of the rifle, and maintains his reputation even to the present day; without the aid of glasses he can put a pistol-ball into the head of a gopher at twenty-five feet. Although an American by birth, he usually converses in Spanish, the language of his wife and family.

Mr. Nidever said in substance: "My occupation has been that of otter-hunting. When I came here, in 1835, I found two other Americans, Isaac J. Sparks and Lewis T. Burton, engaged in the same business. They chartered a schooner of twenty tons burden, built at Monterey, called *Peor es Nada* (Better than Nothing), for a trip to the coast of Lower California, on another expedition, leaving Santa Barbara about the first of May, 1835. I did not accompany them. Not being as successful as those in charge expected, three months later the *Peor es Nada* put into San Pedro, the port, or landing, of Los Angeles, on her return trip. From San Pedro she went to the Island of San Nicolas, about seventy miles southwest from San Pedro and a little further southeast from Santa Barbara, for the purpose of removing the Indians then on the island to the main land, and returned with eighteen men, women and children, as told me by Isaac J. Sparks. How long the Indians had been residents of the island, how

they got there, and by whose authority they were removed, I know not. One of the Indians, rather dwarfed in intellect, but possessing physical strength equal to three or four ordinary men, remained at San Pedro ; two of the women were taken as concubines by two Americans living in Los Angeles County ; the balance of the party divided, part going to Los Angeles and part to San Gabriel Mission. Those two men who selected their concubines from the party took an active part in having the Indians removed from the island."

According to the information I have obtained from those consulted, the history of the Indian woman is as follows : She was absent gathering wood when the others were taken away, but returned to the camp or quarters, and, finding them deserted, followed in time to be taken aboard the schooner; but, not finding her children there, one a babe at the breast and the other about three years old, she plunged into the water and swam ashore in search of them. Unable to find her children, she returned to the beach just in time to see the schooner leaving. She called to those on board, but the only reply she got, and which she remembered to the day of her death, was "mañana," pronounced mah-nyah-nah, the Spanish word for "to-morrow," evidently meaning that the schooner would return for her to-morrow or the following day. She threw herself down on the beach and cried long and bitterly. She did not find her children, and supposed they were either taken off with the others or carried away and devoured by the wild dogs on the island. She became very sick, and lay a long time (she could not compute time) without either water or food, but finally recovered, and forgot her grief in wandering about the island. She lived on a plant resembling the cabbage, called by Californians "palosanto," and a root known by the name of "corcomite ;" also a yellow root, the name of which was not given, and seal or sea-lion blubber. As she had abalone-shell fish-hooks, and lines made of the sinews of the seal, it is probable she supplied herself with fish from the ocean.

An approaching storm, and night coming on, the water being quite shoal about the island and unsafe for a vessel during a high wind, those in charge of the *Peor es Nada* were compelled to leave for the safety of the ship, intending to return at a future time for the deserted woman. The vessel ran before the gale and reached San Pedro harbor in safety. But circumstances did not permit a return prior to the loss of the schooner in a storm a few weeks later, and the distance to the island was too great to be safely made in the small shore boats.

In 1851 Mr. Nidever visited the island otter hunting, and saw signs of a human inhabitant. He saw a footprint made during the previous rainy season, sunken deeply in the now dry, hard ground, and, from the size, judged it to be that of a woman. Also three small circular enclosures, about two hundred yards from the beach, and about a mile apart. They were about six feet in diameter, made of brush, the walls five feet high, with a small opening on one side. Near these openings were sticks of drift-wood stuck in the ground in the form of a tripod, supporting dried seal-blubber. These enclosures appeared to be simply wind-breaks, affording no protection from the rain. The investigation was pursued no further, as an ap-

proaching storm compelled them to leave the island. Mr. Nidever, having seen many otters on his first trip to the island, made a second during the winter of 1852, and being requested by the Mission Fathers of Santa Barbara, had determined to make a careful hunt for the supposed lone inhabitant of the island. The head of the island being better supplied with fresh water closer to that portion of the beach affording the best facilities for fishing, and the altitude such as to command a view of the greater portion of the island and coast, he supposed, if alive, she would be found there, and made his arrangements accordingly. He and his party found the same, or similar, enclosures above mentioned, and the tripod sticks supporting renewed pieces of blubber. In the neighborhood of the huts, or wind-breaks, were seven or eight wild dogs, about the size of a cayote (a small wolf on this coast), and in color, black and white. Mr. N. said he had seen the same kind of dogs among the Northwest Indians. They appeared to be very wild. Within half a mile of the head of the island they discovered a basket in the crotch of a bush, or small tree, covered with sealskin, and containing a dress made of shag's skins (the shag is a species of duck that can neither walk nor fly), carefully folded up, and several square pieces of skin similar to those of which the dress was made, a rope made of seal sinews, abalone-shell fish-hooks, bone needles, etc. As it was late, and time for them to return to their boat for the night, Mr. N. scattered the contents of the basket on the ground, so that on his return he could judge of the presence or absence of the owner, by finding them gathered up or remaining as he left them. The following four or more days were busily spent in otter hunting, and before the search for the Indian woman was renewed a southeast gale compelled them to seek a more hospitable harbor at the island of San Miguel. A third voyage by Mr. N. and six others, four of whom were Indians from Santa Barbara Mission, was made to the island in July, 1853 ; and, although otter hunting was the main object of the visit, the Indian woman was not forgotten. They landed on the northeast side of the island early in the day, and having selected their camping site, all but one—the cook—started for the head of the island.

Near there were observed fresh footprints leading from the beach to the ridge, or higher elevation, but were soon lost in moss-covered ground, which ended the search for the day. The following day they were more successful. One of the party, Mr. Deitman, discovered the object of their search at a distance, and cautiously approaching in an opposite direction from the balance of the party, got quite close to her without being observed. She was in one of her pens, or wind-breaks, clothed in a garment made of the skins of the shag, without sleeves, low-necked, and, as observed when standing, extending almost to the ankles. She was sitting cross-legged, skinning seal-blubber with a rude knife made of a piece of hoop-iron driven into a piece of wood. There was no covering on her head, excepting a thick mass of matted hair of a yellowish-brown color, due to its exposure to the sun and air. The hair was short, looking as though the free ends had rotted off. She would occasionally raise her hand, shade her eyes and look towards the beach, where she evidently saw those from whom Mr. Deitman had recently separated. There were two or three of

the wild dogs around the enclosure, which began to growl as Mr. Deitman approached, but ran off at the bidding of their mistress. The balance of the party were now signaled, in order that she might be captured if she attempted to escape. To the surprise of all, she made no attempt to get away, but greeted each one as he approached with a bow and a smile, and chattered all the while in a dialect which none of them understood, although the Indians accompanying Mr. Nidever were acquainted with several Indian dialects. She was talking apparently to herself from the time Mr. Deitman approached within hearing until she was made aware of his presence.

Within the enclosure a fire was smouldering, and a large ash-pile outside showed that to have been her abiding-place for some time. She was very hospitable—preparing a meal from her limited store of roots before named, and serving the party with a grace and bearing that surprised them all. The expression of her face was pleasing, and her features were regular. Her complexion was much fairer, and her form more symmetrical than that of the Indian women on the main land, and she is believed to have belonged to a different and superior race, which opinion is strengthened by the fact that Mons. Leon de Cessac, a Frenchman, now engaged in collecting archæological and other specimens of bygone years on the Pacific coast of North and South America for a Paris museum, has found many things on the island San Nicolas similar to those previously collected in Oregon, Washington Territory, and further north, and unlike anything found either on the main land or the other islands. Also, the skulls and other bones of the human skeleton found there are unlike those found in other sections of Southern California. A notable observation is the absence of any evidence of syphilis, a striking contrast with other human bones found in this latitude. I have had the privilege of examining several skulls exhumed on other islands, showing very plainly the ravages of this disease in those who have passed away probably centuries ago. Near her enclosure were several stakes, between which was stretched a rope made of the seal's sinews, supporting seal and sea-elephant blubber. Further on were three huts, made of whale's ribs, covered with brush, but giving no evidence of having been lately occupied. By signs, and other means of communication, she was made aware that they wanted her to accompany them, and without any apparent hesitation, she made ready to follow. She filled a basket—such as were common among the Indians of this coast for packing on their backs—with provisions, fishing-tackle and other articles, and taking it on one arm and a firebrand in the other hand, she followed the company.

In their course to where the schooner lay at anchor, they found a beautiful spring of water issuing from the bank above the beach, under a shelving rock. The cracks or fissures in this rock were stuck full of bones, and there were other evidences of an encampment of the lone inhabitant of the island. These bones were used for nourishment, obtained by sucking; they had been dried and resucked many times, showing that, occasionally, she was put upon short rations; but at the time of her discovery, appeared to have an abundance, such as it was. She retained all her teeth, but they were worn low—supposed to be due to the chewing of tough and solid articles

of food. Her age appeared to be about fifty years. Further on was another spring, near the beach, under the bank. Here she indicated a desire to bathe, and was permitted to do so by the balance of the party retiring out of sight. After her bath she joined the others and went direct to the shore-boat, and thence to the schooner. She was prevailed upon to abandon her firebrand and seal-blubber before leaving the beach. Going aboard the vessel, she went directly to the stove and warmed herself, indicating that she knew its use. She ate heartily of the food of the crew, appeared to enjoy it, and it agreed with her. Mr. Deitman made her a skirt of ticking, with which, and a sailor's cotton shirt and a black necktie, her attire was complete. She assisted in making her dress, but could not see to thread her needle. Her sewing was quite rude. She appeared much pleased with her new apparel. The following day she went ashore with the men, who made a separate shelter for her, which she occupied about a month—the time spent on the island otter hunting. She was quite industrious, carrying wood and water without its being required of her. She appeared contented and happy, frequently singing and chattering to herself. The men could not understand what she said, nor she they; but Mr. N. said it was truly wonderful how she could converse with them by signs. She occupied a portion of her time making water-vessels of grass and asphaltum—a substance plentiful both on the islands and shore of the main land. The grass was plaited into a shape resembling a demijohn, but wider at the top, and lined with asphaltum. She would put in several small pieces of the last-mentioned substance, then drop on them small pebbles or stones about the size of hulled walnuts, heated sufficiently to melt the asphaltum, and, grasping the neck with both hands, the lower end being on the ground, would give it a rapid rotary motion for several minutes, and then empty the stones on the ground.

The vessels had a continuous coating on the inside, and are reported to have been water-tight, the lining even resisting the heat of the sun when covered with water. She had both stone and earthen vessels in which to boil water and cook, if desired. To procure seal-blubber, she could kill the seals with a club, when on land, sunning themselves, or snare them with her sinew ropes. She obtained fire by rubbing two dry sticks together. One of them, partly flat, had a groove along its entire length; the other was pointed and fitted into the groove, in which it was rubbed rapidly backward and forward until it burned. As usual, a storm compelled the party to leave the island, and, embarking with their island queen, they soon found themselves at sea in a storm. She made signs that she could stop the storm, and obtaining permission, knelt on the deck facing the quarter whence the wind came, and commenced muttering something supposed to be a prayer. She soon got up, and continued the prayer at intervals during the day, apparently without fear; and when the wind began to abate, she turned to her fellow voyagers, and, with a smile, made signs that her prayers had been answered.

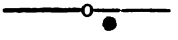
When they came in sight of Santa Cruz Island, off this coast, she told them by signs what it was, and indicated how she had seen from her island ships pass up and down, but never land, and how, the day previous to her discovery, she had seen the Nidever party pass to the

head of the island. She was afraid to make herself known until she knew that there was no danger to her person. There were many places of concealment on the island, and unless taken unawares, she would have been hard to find.

As she was about to land at Santa Barbara an ox-team passed, which so delighted her that she talked, laughed, danced and gesticulated; and before that excitement ended, a man on horseback approached, which gave her even more pleasure than the ox-team. At first it was supposed that she thought the man and horse constituted one animal; but if so, the mistake was soon corrected; for, on landing, she went up to the horse and carefully examined it. The examination gave her additional pleasure. She would turn to her late companions and laughingly request them to look at the beast. She straddled the thumb of the left hand by the index and middle fingers of the right, and moved them to represent the horse and rider as they passed along the beach. She was taken to the house of Mr. Nidever, where she became the centre of attraction. The Mission Fathers took a great interest in her—sending to Los Angeles and other places, hoping to find some one who understood her dialect, but failed. Even the Pepimaros Indians, who were said to have had an acquaintance with the Indians on the island, could not understand her. The family of Mr. N. became very much attached to her, and although the captain of the brig *Fremont* offered largely for the privilege of taking her to San Francisco and placing her on exhibition, it was refused. Also an offer of a thousand dollars from another party for a like purpose was refused. Many people called on her and she received them kindly; but the afternoon was her favorite time for receiving calls, when she would put on her shag-skin dress and entertain her callers with a song and a dance. She cared nothing for money—giving it to the children when given to her. She did not wish to sleep in a bed; and when in bed, did not desire bed-covering; but was careful not to expose her person. Her manners were not rude, and in many things she was more refined than many who enjoy civilized privileges; yet in many things she was very much like a child. She wanted everything which she saw that appeared pleasant to the eye, or seemed good to the taste; and if fruit was withheld from her she would plead for it in such a childlike manner that it was hard to refuse her. When found, she was in excellent physical condition, strong and active; but the eating of fruit and vegetables brought on a diarrhœa or dysentery in about three weeks after she landed; and that, in connection with an injury to the spine, received by falling from a porch, terminated her life four weeks later, or seven weeks from the time she landed. During her sickness she reluctantly permitted her kind hostess to dress her in flannel underclothes, and took her bed under proper covering; but positively refused to return to her former plain diet, as was proposed by some of those who called to see her. Her dress of shag-skins, basket and trinkets were given to Father Gonzales, of the Mission, who, it is said, sent them to Rome.

Statistics in civilized life show a greater longevity in the marital and social relations than in celibacy and the life of the recluse; but here is one who had attained the age of fifty years with a physique indicating that a period in the future might be reached equal to that

of the past, that for eighteen years had been absolutely alone. With the exception of the sickness immediately after her desertion, she reported no illness during the time of her exile. She appeared to enjoy perfect health, with no failure of any of the bodily functions, excepting that of sight, which may have been either hypermetropic or presbyopic; if the former, most likely it was congenital; if the latter, it may have been hastened by the little use made of the power of accommodation for near objects—she daily cultivating the power of distant vision, in commanding a view of the island and looking seaward. The extremes of heat and cold are unknown on the islands off this coast; frost is seldom seen in the winter, and the heat of summer is not oppressive, owing to the ocean winds, which give a most equable climate the year round, favorable to an outdoor life. During the rainy season she probably took shelter in a cave, or under shelving rocks, as found upon the island; but be that as it may, the vicissitudes of the weather did not appear to affect her unpleasantly. Her outdoor life gave a digestion equal to the use of the seal blubber, and her supply of the small variety of vegetables assisted in nourishing her without deranging the secretions. On this island, estimated at fourteen miles in length and averaging about four in width, its highest elevation being not more than six hundred feet above sea level, but sparsely timbered, with its rocks, sandy plains and limited vegetation, clear spring water, which invited repeated ablutions, with no roof to intercept the welcome rays of the sun, our *Female Crusoe* possessed and used the means conducive to a long life. But the change from such a life to one of more luxury and indolence soon demanded the penalty of the violated laws of health—*sickness* and *death!*



What Kills.—In the school, as in the world, far more rust out than wear out. Study is most tedious and wearisome to those who study least. Drones always have the hardest time. Grumblers make poor scholars, and their lessons are uniformly "hard and too long." The time and thought expended in shirking would be ample to master their tasks. Sloth, gormandizing and worry kill their thousands where over-study harms one. A curse rests on laziness and gluttony. By the very constitution of our being they are fitted to beget that torpor and despondency which chill the blood, deaden the nerves, enfeeble the muscles and derange the whole vital machinery. Fretting, fidgeting, *ennui* and anxiety are among the most common causes of disease. On the other hand, high aspiration and enthusiasm help digestion and respiration, and send an increased supply of vital energy to all parts of the body. Courage and work invigorate the whole system, and lift one into a purer atmosphere, above the reach of contagion. The lazy groan most over their "arduous duties," while earnest workers talk little about the exhausting labors of their profession. Of all creatures the sloth would seem to be the most worried and worn.

PREVENTION OF SYPHILIS,

OR

"PUBLIC HEALTH ADMINISTRATION AND PROSTITUTION, BY DR. E. HORNEMAN."*

Translated by T. P. Corbally, A.M., M.D.

In the war which the managers of the "Association for the Suppression of Public Prostitution," have waged against the law of the 10th of April, 1874, to prevent the spread of venereal infection, they have advanced, from its origin, very many serious accusations against the administration of public health. The ministers and the doctors who encouraged the formation of this Association, saw, undoubtedly, that the law was a sanitary regulation, adopted in the interest of public health; but, in the warmth of their philanthropic zeal, finding no stronger cause of complaint, they sought out the unavoidable, but in their eyes scandalous, circumstance that the law puts restraint on abandoned women, who are the objects against whom it was enacted, instead of forbidding the existence of prostitution. Setting out with this view of the case, they construed it as equivalent to the protection and encouragement of immorality, and they and their followers remained blind to all the good features of the law, and directed their attacks and their most serious accusations, both against the law in general, and against the sanitary regulations which were upheld by it. Although these attacks and these accusations, have been again and again refuted in the medical journals, still the opponents of the law return, again and again, to the same charges, in order the better to encourage the untrained but enthusiastic multitude who constitute the most zealous members of this Society. A great number of these are ladies; but neither the ladies nor the other inexperienced members, take the least trouble to read the medical journal, "*Weekly Journal for Physicians and Hospital Times*,"† which has refuted these attacks and accusations. The leaders of this Society find it, therefore, easy enough to reiterate these charges to those who trust them, both in the meetings of the Society and in its own organ; they have even gone so far as to bring the matter before the Medical Society, though in a false and erroneous light. This they ought not to have done, nor should they continually reiterate the attacks which have been so often refuted.

As this journal is the only organ amongst us published in the interest of sanitary science, and as it is also known to many outside of the medical profession, and read by them, I thought that some remarks on the sanitary side of the subject—which can, as may be sup-

---

* Den offentlige Sundhedspleje og Prostitutionen. Af Dr. E. Horneman. Taken from the *Hygieiniske Meddelelser*. *Udgivne af* Dr. E. Horneman *og* Prof. Gaedeken. Ny Raekhe, 3die Binds 3die Hefte. Kjöbenhavn. Jacob Lunds Boghandel, Maj, 1880.

† *Ugeskrift for Laeger og Hospitalstidenden.*

posed, be little more than a repetition of what has been already said in the medical journals—would be new and instructive for the female members, if it could be brought specially to their notice, and that the light thus thrown on this disputed question, would enable them to form a more correct judgment on a subject which they have neglected, but on which, in consequence of the responsibility they have assumed in becoming members of the Association, they should be able to decide intelligently, and of their own knowledge. Still, it is not an easy task to give ladies information on this delicate subject, regarding which, even after repeated attempts, we find it difficult to present useful knowledge in such a form that it can be read by respectable women. I will be obliged, therefore, to be somewhat superficial; but, I hope, notwithstanding, to be able to give so clear an idea of the full significance of the question of prostitution, that any one may be able to understand the nature of the accusations hitherto advanced against the law, and how idle they are. These accusations are copied, almost word for word, from English articles which were published when the subject was there under discussion. They refer to the placing of prostitutes under police supervision, and to the giving the authorities a discretionary power to compel them to submit to police control and to proper medical regulations; and not, as is charged, to the granting legal protection nor encouragement to prostitution.

By this protection and encouragement (as they say) the laws, and the sanitary regulations affecting them, favor immorality—a thing which is itself immoral. As the law punishes only females and lets males go free, it is therefore unjust and partial. Besides, female self-respect is outraged by the forced visitation and examination. In this way, too, the sanitary regulations tend to outrage public decency and to destroy correct principles.

In order to understand what is unfounded in these charges, it is necessary to go back a little in point of time.

When the care for public health awoke to new life in the beginning of the present century, it found, in society, along with many other evils handed down from ancient times, the plague of prostitution, which spread more and more with increasing civilization—especially where this was false and refined—maintained and favored by the luxury of the nobles, by declining morality and by the great wars and great armies which spread everywhere corruption and immorality. This combination of evils was so much the more dangerous because, besides destroying the soul, it also destroys the body, and punishes the sins of parents in their children through the blighting influence of filthy infectious diseases which it transmits to them. Among these diseases, the names of which have hitherto figured only in the writings of medical practitioners, and in the discussions held by them, but which are now—thanks to the activity of this new Society—suddenly found in the mouths and in the thoughts of ladies, there is *one* particularly—syphilitic disease—a disease which is both foul and dangerous. This disease consists of an infectious poison which, from the researches made during many years, is now known to be transmissible through the person in a great many ways, even from nurse to child and from child to nurse, through servants, etc.,

and in this way it can enter stealthily and destroy whole families—yes, even whole communities. To combat this evil was necessarily considered an important undertaking for sanitary science. At first, the attempt was made to prevent prostitution, and to put a stop to this kind of immorality by the enactment of stringent laws against it, and the application of severe punishment for such offences; but it was seen everywhere that this was impossible. Prostitution was inseparable from every large community, and punishment made the evil speedily worse, by driving it into secret places and causing it to be concealed from the doctors, and from the unwary and unsuspecting. Luckily there is one favorable circumstance connected with this disease, that the infectious poison can be destroyed; and this can be done all the more perfectly the earlier and the more completely it comes under medical control and is subject to medical treatment. This, then, became the problem: to endeavor, as far as possible, to circumscribe the limits of the disease, and to modify its severity, since it could not be entirely banished from the community, and to combat in every way possible, in order to prevent the spread among whole communities of the terrible disease which was productive of so much evil in individuals, became the duty of public health officers.

To limit prostitution, to endeavor, by encouraging morality, by the diffusion of more correct ideas regarding the dangers of the infection, and by the removal of all that can lead to the spread of impurity, of dance-houses, immoral pictures and the like, should be the wish of every good citizen.

From such a state of things arose the law of the 10th of April, 1874, which commands that every woman who is suspected of being in a condition to contribute to the spread of immorality and disease, and who follows an abandoned life for a livelihood, shall first be warned, and in every way possible persuaded to leave the evil life she is leading, by admonitions, by enlisting the co-operation of her friends, and by aiding her in every way to reform. These means have succeeded sometimes, and I have had, myself, the happiness, with the help of an officer, to see an unfortunate young girl redeemed from this frightful career. It is only when such means do not succeed, when the unfortunate creature defies all warnings and all offers of assistance, and by continuing in her evil ways proves that she is determined to persist in her vicious career, and derives from it a profit which the law cannot prevent, that it determines to punish her. It generally happens that the first time the guilty woman is arrested, she is brought before a police magistrate, who may punish her by fine or imprisonment; the second time she is placed under strict surveillance by the police, and is compelled to submit to the rules laid down for medical examination and supervision, so as to make it possible to discover the first appearance of the disease that follows their immoral life, and to destroy the infectious poison, which they would otherwise undoubtedly communicate to others. Moreover, the law provides that the female who, while undergoing this punishment, shows desire to reform, shall be helped in every possible way to return to the path of virtue.

As such is the design of the law, to every temperate and candid

mind, its purpose and procedure must appear wise and judicious, moral and just. The opponents of the law, however, justify their opposition by maintaining that it protects prostitution and encourages immorality. But this protection, this encouragement by the law, they cannot point out, for it invariably seeks out the guilty and punishes them. By punishment we surely do not protect and encourage. Perhaps, when they charge the law with protecting vice, they do not mean that it gives open protection, but that it gives toleration, which they construe to be the same as protection. This kind of reasoning I cannot understand; the word protect (Beskyttelse) conveys, in this case, a false impression, which I can best show by an example. No one, for instance, will assert that Mormonism is protected because Mormons are tolerated, while we know very well that the members of the recognized church are protected by the law, in the proper sense of the term. The same is true in many other cases. But, generally, when persons are obliged to tolerate something against their wishes, supposing that it be unavoidable, it might be said that they permit or tolerate it. But prostitution is this inevitable; no one, not even Dr. Meyer, has ever imagined that it could be entirely rooted out. Public health societies and the sanitary police may, much against their wish, be obliged to recognize the existence of such evils, but to tolerate them in reality—never; and then, only those registered can be said to be tolerated in this limited sense. In the same way tolerance is not protection, and still less is it encouragement. Ministers tolerate people holding different religious opinions from their own—nay, even free-thinkers; but, surely, as such, they cannot be said to protect nor encourage them. The opponents of the law know, therefore, very well, that it does not encourage prostitution nor immorality while it punishes them; but they insist that by controlling them they indirectly give them encouragement. This persistence is inexplicable and altogether unjust; for the law gives active opposition instead of encouragement, since it puts the worst prostitutes under public surveillance and control, and thus compels them to follow their immoral industry under many restrictions, and obliges them to use the greatest watchfulness and circumspection, and to remain in obscurity and darkness. This is not protection, but a warning to the guilty, and so it is understood by all who know the law and support it. As a general rule, too, it is only the most ignorant and corrupt part of the community, besides foreign sailors, who come in conflict with the police, those whom the popular Association and their followers cast out as unfortunate reprobates. An end ought therefore to be put to this pretended charge of legal protection and encouragement, and, above all, to the virtuous declamation to which these fictions have given rise.

In regard to the remaining charges I can be more brief. As to the accusation of injustice and partiality, the ministers and sensitive doctors (Klosterlaeger) might, perhaps, be referred, in the first place, to the legal members of the Commission with whom the law originated; also to the Judiciary Committee of the Diet (Rigsdagens) that passed the law, and to the Minister of Justice, by whom it was signed; I must, however, admit that the law hands over to the Criminal Court and then to the police the control of the prostitutes whom they

can get hold of, while the men, whom they cannot get hold of, are allowed to go free. But it is only those females who follow immorality as an occupation that the law punishes, while men who do not follow the same occupation cannot be brought under its control. If this be considered unfair and one-sided, so is it also unjust and partial that only women bear children, while men go free. In regard to the visitation and inspection, it may be remarked that men do not go free; for, as in general all those bearing arms are included in the regulation, it follows that nearly all grown men in the country are obliged to be examined by the inspectors, not to speak of the visitations to which soldiers and sailors are alike obliged to submit. It happens also, now and then, that the police send immoral men, who may be suspected of being infected with venereal disease, for examination and subsequent medical treatment.

The last charge, namely, that the dignity of the female is lowered by the compulsory medical examination, hardly needs refutation, since it cannot well be said that the dignity is lowered which the degraded woman has herself cast away and trodden under foot.

From what has now been said, it is evident that the law neither protects nor encourages immorality, and that it is neither immoral, one-sided nor unjust, and still less does it lower the dignity of the female, when that dignity did not exist; therefore, when the law is applied with circumspection, properly and humanely—in such a way as we have described—most certainly every candid person will admit that sanitary regulations, in every possible circumstance throughout this country, seek to gain their noble purpose, "A sound mind in a healthy body." The incessant cry that the people's rights and moral independence suffer by the application of the law, will be found, in this case, to be mere empty words.

It is lamentable that the founders and leaders of this Association are unable to see the result likely to follow, even after the proof by statistics, which formed their last argument and most powerful means of agitation, has been entirely removed. Without considering what means are being employed by English agitators, it will be sufficient to remark that the result of the statistics which the opponents of the English law, "Against the spread of Contagious Diseases," sought to bring against it were inconclusive, and the fact has been entirely ignored by the opponents of the law amongst us that the *Hospital Times (Hospitalstidenden)* has quoted them as strongly against the maintenance of their position. Statistics, as is well known, are a dangerous weapon, which can easily be turned against those who do not understand how to use them, and they have, in this instance, proved most disastrous to the opponents of the law. Good sense must teach every one that a proper control over infectious diseases, whereby the infectious poison can be destroyed in every case, is better than no control whatever, even though supported by statistics. From some remarks in the last number but one of the *Monthly Report* of the Association, it may be seen that the opponents of the law have themselves begun to doubt of the validity of their statistics in this case. I shall not, then, trouble the reader by repeating here what every one can become acquainted with by reading, for instance, the *Hospital Times*. Therefore I will conclude my remarks with a few

words addressed to the founders and conductors of the Society for the repeal of the new *so-called legal protection of prostitution.*

It would seem that the ministers and the doctors (Klosterlaege), in the warmth of their philanthropic zeal for the overthrow of a law which has existed only a few years, have assumed a responsibility, the magnitude of which they probably did not foresee and which it will be difficult for them to bear. I doubt if the gentlemen have fully considered the consequences that will follow, if they succeed in having the law repealed, so as to throw us back into a condition completely free from any control. It would be easy to show them that just such conditions as we fear, in case they succeed, may be found in many of the large foreign cities, as in England, in North America and California, in China and in the South Sea Islands and in Japan, where they very recently have introduced the English system. The first result will be that secret prostitution will increase and spread in all directions, stealthily entering private places ; it will be found not only in every place of amusement and of recreation, but in many unsuspecting and unprotected homes, and it will then become evident that this Society has been in reality a union for encouraging the increase of private prostitution.

It will soon be seen that seduction, rape, secret abortions, child-abandonment and child-murder will gain the ascendancy, and, finally, syphilitic diseases, with all their dreadful consequences, will run riot without let or hindrance. I must here beg pardon for being obliged to touch even so lightly on a subject that is naturally so repulsive. But nearly all doctors and many travelers who have been in the English seaport cities, as London, and in North America, in China, etc., can testify that the condition of things, without legal control, is likely to become as I have partially described it. We have also the example of many other cities, as Berlin, in which the law restraining immorality has been frequently repealed, but the authorities have been just as often compelled to restore it for the protection of society. Should, in like manner, virtue and morality be undermined, in consequence of the repeal of the law, who will be responsible? On which side will the immorality be found? On the side of Public Hygiene, which supports the law, or on the side of those who are attacking it so violently?

Even when under control, prostitution is certainly a great evil, but a far less evil than when practiced secretly. If we are obliged to choose between two evils, let us always choose the less, in order that the greater good may be secured.

But there is a responsibility resting on the founders and managers of this Association which they cannot evade; that is, the responsibility of having successfully induced so large a number of ladies to join it, who each, no doubt, trusted the founders that the measures to be carried out by them were good and noble, and who have, therefore, unquestioning, lent them their support. It is possible, too, that some of them have allowed themselves to be misled by the example of English women, of whom Mrs. Butler is among the latest ; but they have not considered that there is a great difference between Danish and English ladies. Among English ladies sentiment and imagination are brought strongly into play ; they often become frivolous and fanati-

cal, and cast aside all respect, even respect for their womanhood, and devote themselves to the promotion of a single cause, even though that cause be not always the best. Among our Danish ladies there have been hitherto, fortunately, none who have offered themselves as the apologists of prostitution. (Prostitutionssagen.) But they must remember that they are members of a Society, and as such expected to give judgment in a matter which they could not and ought not to be skilled in, and it is to be hoped that they have not yet studied the question in detail. It is impossible to understand how, in any view of the case, grave and honorable men, as ministers and doctors, could have allowed themselves to invite ladies to enter a society, the special object of which is to discuss and agitate a matter which of all subjects in the world is the least fitted to be openly investigated in the presence of modest women. As the subject turns essentially on the abandonment of individuals to sexual desires and their gratification, on prostitution and immorality, and on the terrible infectious disease that results from them, it is a most difficult and delicate one to treat; and it is indeed so loathsome to touch that physicians and the police, who are necessarily conversant with the subject, can be brought with the greatest reluctance, and only as a matter of duty, to its discussion. The ministers and the doctors—fortunately there are only three doctors so far as I can learn—knew that it was their first duty to inquire more closely into the origin, the usefulness or the hurtfulness of the law which they seek to have repealed; every point in the details of the question of prostitution, every just criticism regarding the contents, the efficiency and the necessity for the law, necessarily required minute examination, even though it proved to be a most obscene and filthy subject. This they did not do. Just the reverse; they began by inviting a number of accomplished and guileless ladies to join them, and initiated them into the mysteries of what they should never know.

Perhaps they will reply to me with the proverb that for the clean all things are clean; but this applies only to the cases in which a higher duty compels one to deal with the unclean, but not to this case. There is scarcely any necessity for ministers to soil themselves with so filthy a subject, and certainly there is none whatever for ladies.

Here, as elsewhere, the consequences always follow. Everywhere, when women take part in revolutionary movements, the pregnant (svagere) woman is impelled to go much farther than the man, for fanaticism easily takes hold of the female sex. True to this principle, it may be seen here that every lady has planned visits to the abandoned in their haunts of vice. The monthly reports of the Society have extended invitations to mothers ostensibly, but so that all women, even abandoned harlots, were invited to discussions upon subjects of questionable propriety and other things; strumpets are held up as martyrs; female modesty as prudery, etc.; and all this is published in this sheet, which is extensively circulated among families, and will be read with avidity by all the young members, whose minds it poisons. But it should be cast immediately into the flames—the female portion of the family should be spared this indignity. We are now opposing a system of propaganda which threatens to break down one of

the strongest pillars of female modesty. And, if modesty is absent, the door is open for immorality, and who will be responsible for it?

I call on all the female members, then, in the name of decency, in the name of morality, as quickly as possible, to abandon a society which every sensible and decent woman should blush to be united with. To point out the justice of this summons has been the purpose of this article. On the other hand—and I say it candidly—it has not been my desire nor my intention that the gentlemen who have taken no part in this agitation as it has hitherto been conducted should now allow themselves to be enlisted in it. We all agree on one point that both private and public prostitution are evils; but we who advocate the principle of control regard it as something relatively good, compared with the frightful consequences likely to flow from private prostitution, which our opponents, probably much against their will, and perhaps with the best intention, seek to propagate and spread, and, while they have not attempted to *propose anything better in its stead*, they are striving to have the law of the 10th of April repealed.

Maj, 1880.

———o———

The "Odor of Sanctity."—The pious "monks of old" imagined that holiness was often proportioned to a saint's filthiness. St. Ignatius, say they, delighted to appear abroad with old dirty shoes; he never used a comb, but allowed his hair to clot; and religiously abstained from paring his nails. One saint attained to such piety as to have nearly three hundred patches on his breeches, which, after his death, were hung up in public as an incentive to imitation. St. Francis discovered by certain experience that the devils were frightened away by such kind of breeches, but were animated by clean clothing to tempt and seduce the wearers; and one of their heroes declares that the purest souls are in the dirtiest bodies. Brother Juniper was a gentleman perfectly pious on this principle; indeed, so great was his merit in this species of mortification that a brother declared that he could always nose Brother Juniper when within a mile of the monastry, provided the wind was at the due point. Many stories are told of lions and other fierce beasts of prey rushing upon such holy men in the desert, but suddenly stopping in their career, and flying away with every sign of fear and terror—which may well be credited, the "odor of sanctity" being too much for the olfactory nerves of a "lion wode!"

———o———

Whining in Prayer.—A curate who had adopted a monotonous whine in his prayers, on being remonstrated with by his diocesan, pleaded that such a tone was proper to acts of supplication, because beggars always assumed a whine when they asked for alms. The bishop replied:

"Yes, but, when they do, I always know that they are impostors, and give nothing."

MENU.

Gourmands and Gourmets.—It may be worth while to point out how the *gourmet*, or the epicure, who eats to combine health with enjoyment, is superior to the *gourmand*, or glutton, who piles his plate with a pyramidal mass of edible substances, merely to gratify a large and debased appetite, without any thought as to how these incongruous elements are to be assimilated. Thus the common councilman, hastily ladling up lumps of green turtle fat, and washing them down his throat with a torrent of cold punch, does not present an agreeable spectacle; nor is he, as he flatters himself he is, the object of envy of the refined gentleman who infinitely prefers a chop red-hot from the gridiron, with a snowy potato fresh from the hissing saucepan, to the half-cold greasy mess on which our city friend regales himself with evident satisfaction. We read of Diogenes meeting a young gentleman on his way to a feast, taking him up in the street, and at once restoring him to his friends as one who was about to incur a great danger, had he not prevented him. But what would that amiable philosopher have said nowadays, had he met the young man of the period on his way about half-past eight of a summer's evening to some such dinner as that described by the famous Mrs. Hoggarty: "Everything in the most sumptuous style—soup top and bottom (white and brown), resumed by turbit and salmon, and immense bols of lobster sauce," and so on.

The late Mr. Walker, the author of the "Original," was an excellent specimen of a *gourmet*. He was one of those who made simplicity the grace of his table, and there cannot be a more admirable contrast between what he called the "barbaric ornaments" of the gorgeous encumbered style of dinner—an instance of which he gives when called upon to carve a tongue, and finds his operations impeded by a couple of ranunculuses stuck into it, sculptured, one in turnips and the other in carrots; and a dinner he describes in the same paper as having taken place at the Athenæum, which consisted of half a dozen oysters, a water-zoutchie of flounders with brown bread and butter, a grouse with French beans to follow, a bottle of claret, and then a cup of coffee. Thackeray used to say that the above was the best dinner a man could have, only he substituted fresh herrings for flounders. Men of good taste are so in all matters, and would no more tolerate or imitate the flashy, trashy *entrées* of the *parvenu's* table, than they would the gilded hammercloths, gigantic armorial bearings, and the glittering harness of his equipage.

It has been well said that a healthy palate is the crown of a cool stomach. While the *gourmand* is snoring off the stupefying effects of the over-night's debauch, the *gourmet*, mindful that those who would enjoy the pleasures of the table must bring to it a healthy mind and body, is up and out betimes, not only perhaps to invigorate himself for the business of the day, but to pay the first visit to his butcher and fish-monger, and secure the usual advantages of the early bird. And here it may be remarked how completely we English place ourselves at the mercy of our trades-people. In France and other countries, madame, accompanied by her *bonne*, will be stirring at the first sound of the wheels of the market carts clattering over the stones, "and in the way of bargain, mark you, will cavil on the ninth part of a hair." She sees that she gets her pound of flesh, and that

her vegetables are fresh and of good quality. With few exceptions, a green-grocer's shop in this country is one of the most disappetizing interiors it is possible to conceive, and it is always difficult to discriminate to a nicety where the coals end and the cabbages begin. Is there any reason why the finest of our ladies should not exercise their superior intellects, and seek and carry off from Covent Garden the vegetable spoils freshly gathered, instead of allowing them to be again crushed and spoilt in a dirty cart on their way to the above-mentioned shop? There are even many club men who will not trust the *chef* to provide the humble materials of their dinner, but take a pleasure in procuring their own salad, and inspecting and purchasing for themselves from off the slabs of the fish-monger and poulterer. These are the real *gourmets*, who see for themselves that they get the best, and, having got it, have it well dressed.—*The Caterer.*

A French Doctor on Gluttony.—Dr. Gaetan Delaunay, in a recent essay on biology, addressed to the French Academy of Sciences, devotes a chapter to the study of *gourmandise* or gluttony, which, in the opinion of the scientific writer, is more commonly observable in men in proportion as they are lower down in the scale of civilization. Intellectual development and an immoderate love of eating and drinking are rarely to be met with in the same person, those who are most addicted to gluttony being savages, negroes, idiots—all, in short, whose brains lie dormant. In European countries, he remarks, that, as a rule, the poor are more given to gluttony than the rich, the peasant than the tradesman, the women than the men, children and old persons than adults, the weak than the strong, fanatics than free-thinkers, etc. According to the learned doctor, the profession or calling in modern French society most remarkable for vivacity at the dinner-table is the clerical profession. First on the list of gluttons, then, he places prelates and priests; secondly, diplomatists; thirdly, magistrates; fourthly, superior State functionaries, such as State councillors and others of similar rank; fifthly, bankers and financial men; sixthly, independent persons, who live on their incomes in idleness; and lastly, artists and literary men. Dr. Delaunay's theory is, in a word, that the greater the intelligence, the more the mind is engaged or the brain works, the less disposition there is for gluttony; and following up this theory he points out, we presume from personal observation, that amongst artistic classes musicians, whom he considers are the least intelligent, are the most fond of good cheer, and in the category of singers, tenors are greater gluttons than baritones. With regard to gentlemen of the brush and chisel, it is the painters who are more addicted to inordinate eating than sculptors, painters of what is called *genre* being more *gourmand* than landscape painters. Women, this young laureate of the Academy tells us, are more greedy than men; milliners, adds the doctor—who seem to enjoy the privilege of penetrating into all the dining-rooms of France—being decidedly greater gluttons than dress-makers. Whilst readily admitting that mental and intellectual culture lessens the attractions of the table, as a general rule, one is inclined to think that in placing prelates and diplomatists in the first rank of gluttons, Dr. Delaunay has caluminated the Church and diplomacy.—*The Caterer.*

Editor's Table.

Yellow Fever continues to be—fortunately thus far, for the season in the United States—a subject of lively discussion only, and vigilance. Dr. Hargis has lately published two papers on the subject, which he has reprinted,* criticising the report of the Havana Commission, and exhibiting much impatience in default of a pronounced recognition of the "ship-origin" of the disease by the Havana Commission and other observers. He compliments the National Board of Health for preventive measures, while he cracks his whip at it for appearing to favor the view of the Havana Commission, that yellow fever is endemic in Cuba or anywhere else, and for not showing more deference to the true source of the disease according to his own conception in 1853, and which he first published in the New Orleans *Medical News and Hospital Gazette, for January*, 1859, that

"Yellow fever is neither indigenous to this country nor a native of any foreign clime, and that it is in the holds of vessels within the tropics a certain period of time, that are to be found the nidus in which the germs of yellow fever are engendered, developed and propagated, and from them, under favorable circumstances, disseminated on reaching inhabited shores within certain degrees of latitude."

Dr. Hargis is restless under the conclusions of the Havana Commission on the endemicity of yellow fever in Cuba, and that "there were formerly many, and there are still some few, who, without personal experience or extensive knowledge on this special subject, look upon it in a much simpler light, who pronounce yellow fever a 'nautical disease,'" while he is still more sweeping in his own conclusions.

It may be true of Dr. Hargis that, "perhaps there is no living American who has seen more of yellow fever than he has since 1830," that the "six great epidemics in Mobile, New Orleans, Pensacola and Milton, besides an annual experience with many sporadic cases amongst the shipping in this bay (of Pensacola), and the United States Marine Hospital," through which he has passed, and the familiarity with ships and the terrible oppression of mariners in the tropics, which he has acquired from long residence in a gulf port, entitle his opinions to great weight, "whilst engaged in the laborious duty of

*The Ship-Origin of Yellow Fever, with Comments on the Preliminary Reports of the Havana Yellow Fever Commission; and Practical Hints Relating to Yellow Fever, by Robert B. S. Hargis, M.D., Pensacola, Fla. Reprints from the *Independent Practitioner*, June and July, 1880.

culling, for the common good, from the experience of centuries." But Dr. Hargis should not be unmindful of the fact that there have been other students of yellow fever beside himself, and that some of them may have had opportunities even as good as his for observing the conditions of its habitat, both afloat and ashore, and he should not expect of them the use of his spectacles, or specially graceful silence under such sweeping declarations as that, "Land malaria and filth on land are charged with the local production of yellow fever only by those who do not read and cannot observe." Notwithstanding, Dr. Hargis' own cited cases of "nautical origin," are for the most part culled from the descriptions of other observers, are *filthy* ships—filthy from the over-crowding in the "middle passage," filthy cargo, in communication with filthy ports, or from the filth of rotten wood commingled with bilge-water. And confessedly, by Dr. Hargis himself, "Ocean-infected ships usually have rotten timbers, are not very leaky, come in sometimes from Rio with rock ballast, whereas at others they have a more dangerous ballast in the shape of coal, which is loaded in Wales, to avoid the charge for relieving a vessel of other ballast." Of such conclusions as this last there is nothing to be said in controversion. Our own views, on the subject of filthy ships at least, are sufficiently well known. But we are at a loss to understand with Dr. Hargis why the same sort of occupied filth, but much more abundant, closely walled up with its stagnant emanations in the back yards and ground floors of Havana and Vera Cruz, Sierra Leone and Loando, and subject to the same conditions of climate as the ships at the wharves of those places, is not endowed with the same properties, fraught with the same dangers. Moreover, some of Dr. Hargis' sharp distinctions are, we are constrained to believe, wholly fanciful. He states that "Land-infected vessels show signs of the disease usually after leaving an infected port, and rarely beyond the 4th or 5th day. When a ship has been ten days at sea, or over, the chances are she has a foul bilge, and will infect all the susceptible people who enter her.

"Vessels from Rio, coming to this port (of Pensacola), if infected in Rio, show signs of the disease unmistakably south of the equator, and usually south of the tropic of Capricorn. If the outbreak be delayed until the line is crossed, the permanent infection of the vessel, originating in the ship, is highly probable. Nothing but familiarity with this subject, and with shipping, can enable a sanitarian to appreciate the sharpness of these distinctions." Now, the fact is, that one of the most familiar observations of cruisers is, that putting to sea from a yellow fever port, on the first indications of the disease on board, is frequently the salvation of the crew; and that fatal as the

disease sometimes is at sea on board filthy ships, it is commonly more fatal in port; and for manifest reasons—the motions of the ship and the freedom of the atmosphere are promotive of better ventilation.

Sixteen years ago, when fresher from such scenes than we now are, we wrote, as the result of observations covering a corresponding period:

"That yellow fever is the natural offspring of regions and places characterized by the presence of putrefying organic matter under a high temperature, is a truth now so generally admitted as to need no discussion. That all such places, however, even of similar magnitude, are not in the same degree liable to the production of yellow fever poison is an equally certain truth; but this circumstance probably arises from some inappreciable difference in the nature of the resultant poison from different meteorological conditions in the aggregate, though alike, it may be, in high temperature. At least there appears to be a difference great enough to characterize the three great deltas of the world—the Nile, the Ganges and the Mississippi—as being the three greatest sources of the plague, cholera and yellow fever. Hence, the conclusion seems justifiable that, in proportion as the conditions comprehended in these great deltas respectively exist, exists also the liability of originating and propagating their respective infections.

"Stagnant air, dampness, darkness and warmth are frequently the inseparable conditions of the holds of vessels in warm climates. If to these conditions there be added a filthy vessel, putrid provisions or bad water; or if the cargo consists of material peculiarly liable to infection, such as rags, hides, feathers, sponge or sugar, the circumstances are then complete, not only for the reception of the poison, but for its origination and continuance. . . . .

"The *persistence* of yellow fever aboard ship necessarily involves the question as to its direct cause. But, fortunately, whatever difference of opinion may exist as to the nature of the virus of yellow fever, there can be no question as to the conditions of its existence. The decomposition of organic matter under certain climatic conditions is an essential requisite. And the propagation of the virus, it is well known, most readily takes place under the same conditions as give it origin. Certain *material* of commerce and clothing, when exposed to the conditions which evolve the virus of yellow fever, are prone to become infected, and such things become new centres or fomites for its retention and further propagation. If, therefore, a ship is in such a state, or has such material on board as will favor the reception of the poison, she is proportionately well conditioned for its retention. And it will exist under such circumstances just as long as the conditions favorable to the decomposition of organic matter exist; but upon the suspension or cessation of these, the evolvement of the virus will also be suspended or cease. If suspended only, as they are annually in Vera Cruz, by the moderately cold north wind, under favorable climatic conditions, it will again be renewed, and, it may be, transported to far distant, though similar re-

gions to that from which it took its origin. Hence the liability of yellow fever to occur annually in some places, and to break out again and again aboard the same ship, and to be propagated to new localities favorable to its reception, even where it has never existed before. Fomites from a vessel thus conditioned may be so warmly and securely packed as to admit of transportation even into a comparatively cold climate, and yet continue for a time liable to strike a fatal blow when least suspected. . . .

"The most effectual means of getting rid of yellow fever infection aboard ship, or that which may be contained in fomites, are suggestive of the true nature of the virus. They are precisely those which are known to be most efficacious for the arrest of putrefaction, namely, the extremes of temperature and powerful chemical agents. A freezing temperature, or a degree of heat sufficient to coagulate albumen, effectually destroys it. Approximate temperatures to these extremes usually only arrest it for brief periods of time. And so, too, of chemical agents; if they are powerful and highly concentrated, such as are known to decompose organic matter, or permanently arrest putrefaction, they will effectually destroy infection; if less highly concentrated, they only arrest the activity of the poison for a brief period, and leave it liable to revive again on the first favorable opportunity.

"Such are briefly my conclusions from a somewhat extensive observation and research on the conditions of yellow fever aboard ship, and its propagation into new localities. Examples illustrative of these views may be deduced from the recorded observations of many of the closest observers of this disease, though entertaining, perhaps, widely different views from those herein stated."*

Previous to giving expression to the foregoing views we had had considerably more extensive opportunities for observing yellow fever than we have had since, but our subsequent observation, such as it has been, continued attention to the subject and recent (last year's) searching inspection of the chief localities in the United States where yellow fever is most wont to prevail, have rather strengthened our previous conclusions, Dr. Hargis' discovery and cullings to the contrary notwithstanding. But with all Dr. Hargis has said, or can say, of the importance of a thoroughly cleanly commerce, rigid exactions, prompt, energetic and efficacious cleansing of all foul vessels and merchandise, we thoroughly agree; and, recognizing the dangers of woodsoakage and decay, in this regard, we are much gratified to learn through Dr. Hargis' pamphlet that Mr. Gamgee has discovered "means whereby the foulest timber can be purified by hot drying oils, which destroy all moist organic matter, and render the wood ever after impervious to moisture or elements of decay." It is a most im-

* On the Cause, Malignancy and Persistence of the Yellow Fever aboard Ship, by A. N. Bell, M.D.—*Transactions of the Epidemiological Society of London.* Vol. II., p. 225, 1864.

portant discovery, and we earnestly commend it to all merchants as well as to the National Board of Health and all other authorities interested in the promotion of marine hygiene.

Since writing the above we have been favored with the following communications:

PENSACOLA, FLA., *August* 7th, 1880.

DR. A. N. BELL, EDITOR OF THE SANITARIAN:

I have inquired diligently with regard to the ship *Excelsior*. The particulars relating to the yellow fever on that vessel may be resolved into the following brief statement: The *Excelsior* reached the Mississippi Quarantine Station on the 24th of June, after a voyage of forty-six days, from Rio Janeiro; she was detained there eleven days. She was "thoroughly fumigated" and admitted to pratique June 5th, and began to discharge without delay. Two days thereafter one of the crew, James Kenny, was taken sick and sent to Touro Infirmary, where "he died with symptoms of yellow fever." The ship was sent back to the Mississippi Station at once, and a short time afterwards two more of the crew were taken down with yellow fever, and one died after a short illness. No other cases occurred. The cargo of the *Excelsior* consisted of 3,600 sacks of coffee, which was stored in a warehouse, ordered to be fumigated thoroughly and remain in store until further orders from the Board of Health.

The disease manifesting the phenomena of yellow fever originated undoubtedly from local sources of infection evolved from noxious matters in the hold of the vessel itself. If the poison had been contained in the sacks prior to shipment at Rio, yellow fever would have manifested itself amongst the crew within a few days after leaving the port of Rio Janeiro. Fifty-seven (57) days after leaving Rio elapsed before the first case occurred aboard this ship. "The cargo," however, "was shifted at quarantine to facilitate fumigation, and it is probable that the men contracted the fever by handling cargo at that place." No yellow fever, of course, existed in New Orleans at that time nor since, up to this date.

I have just received a letter from the quarantine physician at the Port of Pensacola, Dr. T. McLeonard, in which he states that he has been informed by a communication from a gentleman of high standing that the "Austrian bark *Dubrovachi* sailed lately from London and called at St. Thomas, W. I., where no yellow fever has existed for several years, for orders, remaining there but a day. Received orders for north of Hatteras, sailed, and before reaching New York the captain and three men died of yellow fever." This vessel and the ship *Excelsior* are typical cases of yellow fever infection evolving *sua sponte* in the holds of ships sailing in the tropical seas. I have scores of similar instances recorded in my memoranda.

ROBT. B. S. HARGIS, M.D.

NEW ORLEANS, *August*, 9th, 1880.

TO THE EDITOR OF THE SANITARIAN:

. . . . The Swedish bark *Excelsior* was built in 1867, in Hamburg, and was used as a passenger packet between that city and Valparaiso

until 1875, when she entered into the East India trade; since 1878 she has made two trips from England to Rio Janeiro, and from Rio to New Orleans—back to England. Never before this trip and arrival at New Orleans has there been any case of yellow fever on her. She arrived here last year, on her first trip, during the last days of November. The men, or crew, *did not go ashore* when *in Rio*, they did not handle the cargo at Rio, nor at New Orleans, *but at Qu rantine were made to shift the coffee sacks* in the *hold of vessel three times;* on the 25th and 28th of June and 3d of July. Before the first shifting of cargo and after it and the other two shiftings, hold was fumigated by burning a quantity (?) of roll sulphur in *pots*—four pots. Hatches closed for twelve hours after each fumigation. The bilge and limbers could not be *very well* exposed to the fumes of sulphurous acid gas, as on the bottom of vessel there were fifty tons of ballast (hard granite), covered with mats, on which the coffee was piled.

On the whole, the vessel, not having been unloaded of freight and ballast at the quarantine station (there being no men or facilities for such work, and pan or pot fumigation and pumping out of bilge water and disinfecting liquid thrown in relied upon), I believe the disinfection under these circumstances was inefficient, and that the men contracted the disease at quarantine station, while handling the cargo. Capacity of vessel, 437 tons; cargo, 3,600 sacks of coffee.

History of cases: No. 1 took sick on board July 8th, a little after noon; July 10th, at 10 A. M., taken to Touro Infirmary, threw up black vomit that night, and died July 11th, at 1 A. M. No post-mortem made.

On the 11th of July at 2 P. M. the *Excelsior* left the city for quarantine with one man, of crew, taken sick that morning, and *all the crew* (*except* the captain, who was in the country on a visit to a friend). This case, No. 2, recovered at quarantine station hospital. Case No. 3, taken sick at quarantine station, where he died. On the 14th another seaman took sick and died at the same place. Since the 14th of July no new cases, to date. Total, 4 cases, 1 recovery.

Bilge was pumped out twice—first and last day of detention, at quarantine, and also disinfected with copperas solution and carbolic acid. The captain considers his barque a sound and clean vessel. *Pan* or *pot fumigation* and want of suitable apparatus or sufficient laborers and facilities have caused this *loss of life*, have created *panics*, injurious both to commerce and to intelligent quarantine, as the above results encourage in the minds of the masses serious doubts as to the use of any quarantine and the adoption of non-intercourse as the only safe means of protection. This is not very cheerful, nor does it do credit to sanitary science. The most expensive fumigating apparatus, with men and other appurtenances, would be cheap compared with the consequences of a quarantine station, *disinfecting* (?) a vessel, with *great apparent care*, and *much trouble;* and with the results of the *Excelsior* and her most unfortunate seamen. Has the United States no power to establish a quarantine at the mouth of our river, in order to protect us and all the States of the Mississippi Valley, so long as the State of Louisiana and its Board of Health have not the means of maintaining an *efficient* and *reliable quarantine?* It

has no facilities for unloading or cleaning vessels, and no laborers to do that work. The Auxiliary Sanitary Association is unrelenting in its efforts to keep the city clean and healthy, and it gives much assistance to city and health authorities. . . . Up to date this year there has been no case of yellow fever in the city except the one from the *Excelsior*.

***

The State Board of Health of New York, under date of July 1, 1880, having completed its organization, began the work prescribed by the law under which it is established, by preparing and sending out the *forms* and *methods* of record authorized for obtaining and preserving the registration of births, marriages, deaths and prevalent diseases throughout the State. "These forms are framed in accordance with the plans agreed upon at the National Conference of Vital Statisticians and Health Officers, held in Washington last May. They conform to the best experience and economy, and are adapted, as our laws require, to obtain the records that are to be immediately registered in the cities, towns and incorporated villages, as well as in the State Bureau. . . . .

"The theory of the various laws concerning registration is, that the school district and the town, the village and the city—as communities with organized local government—and the supervisors, with their powers of local control and expenditure, shall provide for the maintenance of the system of records which the State Board must so organize and superintend as to make it an efficient State system of vital statistics."

The Chief Duties of the Board are, to "take cognizance of the interests of health and life among the people;" to "make inquiries in respect of the causes of diseases, and especially of epidemics, and investigate the sources of mortality, etc., and to collect and preserve such information relating to deaths, diseases and health, as will contribute to the promotion of health and the security of life in the State." For this purpose, the Board is charged with the general supervision of vital statistics of the State, and is required "to prepare the necessary methods and forms for obtaining and preserving such records and to *insure* the faithful registration of the same in the several counties and in the Central Bureau of Vital Statistics at the Capitol of the State."

Special attention is invited to the provision of the law which requires all local Boards of Health in the State to send copies of all their reports and publications to the Central Bureau. They should be directed to E. Harris, M.D., Secretary of State Board of Health of N. Y., Albany.

About forty of the chief cities and towns in the State are said to be already in hearty co-operation with the State Board, and it is

reasonable to believe that since *all* are now placed in correspondence, by means of the forms and methods sent out for facilitating and economizing the work of registration, the perfection of the system contemplated by the law will be in full progress. The labor of the Board, and of the Secretary, in particular, in organizing the work is immense, comprehending every school district as well as every city and town in the State, the number of which may be estimated by the thousand. Every physician in the State, at least, should lend a helping hand; for upon their intelligent aid and co-operation, more than upon all other citizens, depend the efficiency of the work. But great and important as this work of vital statistics is, it is by no means all.

"At any time the Governor of the State may require the State Board of Health to examine into nuisances, or questions affecting the security of life and health in any locality," . . . and "at any time at the request of the State Board of Health." The necessity and importance of the duties involved in these sections will be recognized by every intelligent citizen, but most especially by all who are brought in contact with the persistent and defiant—

Nuisance Mongers of Long Island City, and the more by reason of the passway, through that city, by right of public domain, for thousands of people daily, and many of them citizens of other States.

The nuisances of this place have from the first been a disgrace to the cities of New York and Brooklyn, for their use of the region as a common dung-heap, and, of Brooklyn especially, for using its creeks as open sewers. Having thus created the nuisance to begin with, these cities should be held pecuniarily responsible for its abatement; but the authority for enforcing this responsibility appears now to rest with the State, inasmuch as a number of citizens have here invested much capital and industry in the manufacture of fertilizers, and in other offensive trades. Confessedly the nuisances thus created have outgrown the control of the authorities by whom they have been fostered—hence they have become public nuisances in the broadest sense. By a recent correspondence between the Managing Director of one of the railroads which pass through their midst and the Commissioner of Health of Brooklyn, the latter seems now to commend this enormous nuisance to public respect!

"It is unfortunate," he writes to the railroad officer, "both for you and for Brooklyn, that in running your railroad through Brooklyn you should have selected a route over the whole length of the first of these nuisances and across the second in its very worst and most noisome part; unfortunate for you, because it inconveniences your patrons, and for Brooklyn because it gives them a bad and erroneous opinion of our fair city. But having located yourself

in the midst of an already great and long existing nuisance, the best efforts of this Board to remove which had been exercised for many years before your advent, unsuccessfully, it is hardly reasonable to complain at this day of the inconvenience which such location may have caused to your patrons."

Surely it is a manifold greater misfortune for health authorities to cultivate a public sentiment favorable to the toleration of such nuisances in the midst of populous places, and to advocate acquired rights for their maintenance, to take precedence of city extensions and public highways. We commend the subject to the State Board of Health, and sincerely hope the railroad companies concerned will unceasingly prosecute the extermination of this dangerous nuisance to the public health, no matter who may be its apologists or what the cost to the authorities responsible for its existence.

The Defilements of New York Harbor.—To the Editor of The Sanitarian: I beg to say a few words on an important subject—the dumping of garbage into the bay and waters around New York. A more senseless, stupid and insane thing cannot be done. Why don't the learned City Fathers take a lesson from the old Danish King Canute, who, nine hundred years ago, showed to his followers and worshipers that he could not control the tides and waves of the ocean? The men who foolishly dump the garbage and refuse into the sea now are as powerless as the old Danish king was to control the tides and the waves. Captain Williams, a few days ago, unwittingly hit the nail on the head when he said that he nor his men had any control over the matter, or garbage, after it was dumped into the water; that the waves and the tides had the care of it then; and this is the pith and marrow of the whole case, the whole question. If this offensive matter were carried thirty miles out to sea and dumped into the water it would return to the shores in twenty-four or forty-eight hours, because the greater part of it will float. The law of gravity keeps it upon the surface of the water, and the tides and the winds return it to the shores.

Besides the tides the southerly winds prevail here, in the warm season, two-thirds of the time; and the winds alone would drive the floating matter to the shore. I have had fifty years' experience and observation upon this subject and upon other subjects relating to the health of the city, such as street-cleaning, gutters, docks, wharves, prison yards, alms-houses, asylums, pest-holes, malarial bogs and fever-breeding sewers—places where disease and death ever reign, and I know what I affirm. I regard this infamous work of spreading the essence of disease broadcast upon the waters around these cities as a high crime against God and man—a crime against the public weal and against the lives and welfare of the people; and as such the nefarious and vile work should be ended at once and forever.

A large portion of the garbage and refuse matter can be consumed—burnt on the premises—where it is made, without any difficulty or injury. I know a family, the wife a notable housekeeper, remarkable always for the neatness and perfection of housekeeping; this family, for twenty years past, have not had a swill pail, garbage box or bar-

rel on the premises, all the refuse of the kitchen having been *cremated* in a Beebe's range, No. 1, without the least possible unpleasant odor. If this can be done in one house it can be done in any number. Most of the garbage of the city can be disposed of in the same manner.

In regard to street dirt, it is of great value as a fertilizer; and more than thirty years ago I proposed a plan for its removal, without cost to the city, except shoveling it into street carts. Indeed, the material could have been made to pay all cost of removal and dumping into the railroad car boxes, which were to be set in large flat-bottomed boats or scows moored to the dock, so that the street carts could drive on them and dump their loads. When filled the boat or scow to be taken to the L. I. Railroad dock, and by means of machinery lifted out and placed on the railroad trucks, and thence into the country. This plan had the approval of the Mayor and most of the Aldermen of New York, and men of intelligence and character, such as Prof. Renwick, of Columbia College, Hon. Henry Meigs, Gen. A. Chandler, Dr. Underhill, the grape culturist, of the American Institute, the President and Directors of the L. I. R. R. Co., and would have been adopted but for the unfortunate failure of the L. I. R. R. Co. thirty years ago. This plan is still available and should be adopted as soon as practicable arrangements can be made.

All street-collected garbage should be *cremated*. A suitable place should be provided and the necessary kilns built, and all the garbage burned until other arrangements can be made for its disposal.

I can now only refer to another monstrous evil, the poisonous and liquid contents of the sewers of the cities that are poured into the waters. There are no other cities in the world whose waters could stand such pollution: a word to the wise ought to be sufficient. This is an important subject, but I can only glance at it at present.

Truly yours,

EDGAR F. PECK, M.D.

Brooklyn, N. Y., August 11th, 1880.

The Adulteration of Soaps.—In reply to numerous inquiries about the qualities of different kinds of soap, and their sensible properties, for comparison with the Higgins' German Laundry, the analysis of which we published in last number, we shall be ready for other samples by and by.

Of a sample of Castile sent us for an expression of opinion only, especially for the bath, and of the quality of this variety of soap in general in the market, we are able to give a singularly apropos answer from Supplement No. 6, of the *National Board of Health Bulletin* Report on Deteriorations, Adulterations and Substitutions of Drugs, by C. Lewis Diehl.—(A more extended notice of this admirable report, and of Professor Kedzie's, on the Adulteration and Deterioration of Foods, in the same number, we reserve for a future occasion.

Castile Soap (imported) is thus characterized: "Inferior vegetable and animal oils used in its manufacture. Large amount of water

introduced. Heavy mineral matters, principally baryta, to increase weight."—Of the particular sample before us, it has none of the qualities of a good soap; has a stale, musty odor, is soluble in water with difficulty, and is difficult of removal from the hands after washing with it—leaving a disagreeable greasiness. This we quickly removed with Higgins' German Laundry Soap, which is a much better soap even for the bath—for which it was never intended—and incomparably superior to it for all other purposes.

To the Editor of The Sanitarian:

Dry Wells and Their Dangers.—I desire information on a subject, which I have no doubt you can give me. Should your time permit will you do so?

(1). Should soil pipes leading from water-closets to dry wells (a dry well is a vault receptacle built under ground, of brick without mortar joints to near the arch into which the soil pipe empties), be ventilated by an open connection with the highest part of the soil pipe within the premises, through a large pipe or flue to a point above the roof of the building? (2). Would the water collected from the roof in cisterns be contaminated by the condensation of the gases escaping from such a pipe or flue? A city ordinance prevents the contents of water-closets from being emptied into the sewers; consequently "dry wells" are used. There is no escape for the gases except through the water-closet. By enlightening me on this subject you will greatly oblige,

Yours respectfully and truly, W. H. Huger, M.D.

Charleston, S. C., August 7th, 1880.

Reply. (1). Unquestionably the traps of all water-closets so connected should have ventilating tubes extending above the roof of the building, either independently, or (if there be more than one, from sinks as well as water-closets), concentrated in a common shaft; the ventilating tube to trap should be at the highest point of the curve, on the distal end of the trap.

(2). The danger of contamination from such a source is too remote for consideration in comparison with the advantage to be afforded by the provision. In short, we do not believe there would be any danger—the gases escaping from such a flue into the open air would be effectually disposed of by oxidation without risk of condensation or solution in the falling rain. The danger of soil pollution and escaping gases therefrom, through the floors and into houses in proximity to dry wells is manifold greater than any such possible contingency as the condensation of gases on the roof. Indeed, we consider dry wells a perpetual source of danger, inconsistent with the plainest principles of sanitary science.

The International Sanitary Congress will meet at Turin, September 6, and close September 12. The King, the Ministers, the

Mayor, the Prefect and all the officials will take part. All foreign governments are invited to send delegates.

An Institute of Heredity has been proposed in Boston, which shall have for its object the improvement of the human race by the diffusion of knowledge on the common causes of deterioration, by the inculcation of a wholesome sentiment against the marriage of persons afflicted with hereditary diseases or dominated by vicious habits. Persons in sympathy with the movement are requested to address

LORING MOODY, Boston.

Monument to Claude Bernard.—The subject of the following note will commend itself to all members of the medical profession who would cherish the memory of one of the foremost lights in modern research in the promotion of scientific medicine.

TO THE EDITOR OF THE SANITARIAN:

Having been selected by the Paris Committee (Messrs. Ranvier and Dumontpallier) having charge of the subscription for a monument or memorial to the late Prof. Claude Bernard, to represent them in the United States, I beg leave to be allowed to use your columns for the purpose of appealing to the members of the medical profession and all others interested to subscribe to this worthy project.

I need hardly remind your readers of the great debt which every practicing physician owes to the labors of the illustrious physiologist whose memory we are asked to honor in this way.

All inquiries and subscriptions, in the shape of bank checks or postal money orders, should be addressed to me.

Yours, very respectfully, E. C. SEGUIN, M.D.,

July, 31*st*, 1880. New York.

—o—

Literature.

Buck's Hygiene and Public Health* is, by all odds, the most comprehensive work on sanitation hitherto published in this country. An encyclopædial work corresponding with the general scheme of Ziemssen's Cyclopædia, and in the place of the first volume of the series of that work, because, as the editor states, it "treats the subject almost entirely from a German standpoint, and takes cognizance of a state of things very materially different from that which

**A Treatise on Hygiene and Public Health.* Edited by Albert H. Buck, M.D., American editor of Ziemssen's Cyclopædia of the Practice of Medicine; Instructor in Otology in the College of Physicians and Surgeons, New York; Aural Surgeon to the N. Y. Eye and Ear Infirmary. 2 vols., 8vo, pp. 792 and 657. New York: Wm. Wood & Co.

exists in this country. It was believed, however, that a treatise on private and public hygiene, written with special reference to the different climates, conditions of soil, habitations, modes of life and laws of the United States would meet with favor, not only among the subscribers to Ziemssen's Cyclopædia and physicians generally, but also among all educated classes." A very praiseworthy undertaking certainly, on the part of both editor and publisher.

The work is not, however, "a treatise" in the ordinary acceptation of the term—that is to say, a systematic work comprehending all branches of its title, like the work of Michel Lévy, for example, but a collection of twenty-three essays, or, indeed, treatises, by nearly as many different authors on different subjects. But it is none the less valuable or practical on this account; nay, rather the more, for it consists of chosen subjects, and in a double sense: first, of subjects as being the most important in a practical point of view; and, second, in the special qualifications of the writers.

This peculiarity of the work is particularly marked in the introductory chapter, including: I. Prefatory remarks; II. Causes of Disease; III. Jurisprudence of Hygiene, by John S. Billings, M.D., Surgeon U. S. Army; than whom, it is not too much to say, no more competent person in the United States could have been chosen to open up such a work, or could have done it with better effect. This chapter comprehends sixty-seven pages. It expresses hygiene in its most tangible aspects; shows its relations to physiology and pathology, and how its practice has been, how it can and ought to be made more effective for the good of the people by wise laws for its promotion.

Following the introductory chapter, volume first is divided into two parts: Individual Hygiene and Habitations.

Part I. comprehends five essays: Infant Hygiene, by A. Jacobi, M.D., Clinical Professor of Diseases of Children in the College of Physicians and Surgeons, New York; Food and Drink, by James Tyson, M.D., Professor of General Pathology and Morbid Anatomy in the University of Pennsylvania; Drinking Water and Public Water Supplies, by Prof. Wm. Ripley Nichols, of the Massachusetts Institute of Technology; Physical Exercise, by A. Brayton Ball, M.D., of New York; The Care of the Person, by Arthur Van Harlingen, M.D., Chief of the Clinic for Diseases of the Skin, Hospital of the University of Pennsylvania.

Part II consists of three essays: Soil and Water, by William H. Ford, A.M., M.D., President of the Board of Health of Philadelphia; The Atmosphere, by D. F. Lincoln, M.D., of Boston; General Principles of Hospital Construction, by Francis H. Brown, M.D., of Boston.

Volume second contains fourteen essays, also divided into two parts: Part I., Hygiene of Occupation, by Roger S. Tracy, M.D., Sanitary Inspector of the Board of Health, New York; Hygiene of Camps, by Charles Smart, M.B., C.M., Assistant Surgeon U. S. Army; Hygiene of the Naval and Merchant Marine, by Thomas J. Turner, A.M., M.D., Ph.D., Medical Director, U. S. Navy; Hygiene of Coal Mines, by Henry C. Sheafer, Coal Editor of the "Miner's Journal," Pottsville, Pa. Part II: Infant Mortality—Vital Statistics—by Thomas B. Curtis, M.D., Surgeon to Out-Patients at the Massachusetts General Hospital, Boston; Adulterations of Food, by Stephen P. Sharples, S.B., Boston, Mass., Chemical Inspector of Milk for the city of Cambridge; Public Nuisances, by Roger S. Tracy, M.D., Sanitary Inspector of the Board of Health, of New York; Quarantine (with reference solely to seaport towns), by S. Oakley Vanderpoel, M.D., LL.D., Health Officer of the Port of New York, late President of Med. Society of State of N. Y., Prof. Pathology and Practice of Medicine in the Albany Med. College; Inland Quarantine, by S. S. Herrick, M.D., Secretary of the Louisiana State Board of Health; Small-pox and other Contagious Diseases (scarlet fever, measles and whooping-cough), by Allan McLane Hamilton, M.D., Sanitary Inspector of the Board of Health, New York, and Bache McE. Emmett, M.D., of New York; Hygiene of Syphilis, by F. R. Sturgis, M.D., Clinical Lecturer on Venereal Diseases, University of the City of New York, Surgeon to Charity Hospital, etc.; Disinfectants, by Elwyn Waller, Ph.D., Chemist to the Metropolitan Board of Health, New York; Village Sanitary Associations, by Roger S. Tracy, M.D., Sanitary Inspector of the Board of Health, New York; School Hygiene, by D. F. Lincoln, M.D., of Boston, Mass.

The several essays are important contributions to sanitary science, and, with but few exceptions, every one complete in itself, comprehending the general literature and giving the gist of the subject treated of. Most especially is this the case in the masterly essays of Professors Jacobi and Nichols, President Ford, Medical Director Turner and Assistant Surgeon Smart; the admirably practical essays of Sanitary Inspector Tracy, and Dr. Lincoln's essay on School Hygiene. In especially signalizing these, however, it is far from being our purpose to belittle or detract in the least from the general excellence of the rest, and particularly from those on comparatively new but very important subjects—the Hygiene of Coal-Mines, Metal-Mines, Syphilis, and Inland Quarantine.

Several of the essays—all which could be more clearly elucidated thereby—are fully illustrated by appropriate cuts, diagrams and tables. Indeed, no pains or expense has been spared by either wri-

ters or publishers in this successful effort to produce a work worthy of a prominent place in every well-appointed library, useful to every medical practitioner and essential to every sanitary worker.

Management of Children in Sickness and Health, by Amie M. Hale, M.D., is one of the most sensible little books for mothers we know of. It begins with the first ablution, and in an easy style devoid of technicalities and useless formalities, gives wholesome instruction on nursing, clothing, food, air and exercise for the whole period of childhood, followed by three short chapters on the more common diseases and accidents; how they can best be avoided, how best to meet them when they occur, and the dangers of quackery and overdosing. These are followed by a chapter of aphorisms which all mothers would do well to commit to memory. It concludes with three pages of formulas wholly unnecessary for physicians, and more likely to do harm than good in the hands of other persons. With this exception, it affords us pleasure to commend the book to all mothers. Philadelphia: Presley Blakiston.

Carlsbad—Its Natural Healing Agents,* is a very readable brochure which all American travelers abroad for health should have, if they would know the qualities of the waters and the advantages of one of the most famous watering places in the world. Besides a clear account of the virtues of the waters, for both internal and external use, and their suitableness to complaints which flesh is heir to, it gives all needful information in regard to accommodations and social comforts with which it would be well for people always to make themselves familiar beforehand, if they would reap the fullest benefit of sanitary resorts.

A Selection of Spiritual Songs, with music, for the Sunday School, by the Rev. Chas. S. Robinson, D.D., completes an excellent series with a successful attempt to put into the hands of our children a really attractive hymnal of permanent value. In the musical preparation of this hymnal Dr. Robinson was aided by Prof. Sherwin, who contributes a number of satisfactory compositions. The book is pleasing to the eye, while the poetry and music will raise and not debase the taste of our youth. New York: Scribner & Co.

---

* Carlsbad and Its Natural Healing Agents, from the Physiological and Therapeutical Point of View. By J. Kraus, M.D., Consulting Physician at Carlsbad. With Notes Introductory by Rev. Jno. T. Walters, M.A., rector of Norton, Devonshire. Second Edition, 12mo, p. 103. London: Trubner & Co.

The Truth About Vaccination.—An Examination and Refutation of the Assertions of the Anti-Vaccinators, by Ernest Hart, Chairman of the Parliamentary Bills Committee of the British Medical Association, etc., is a pamphlet of seventy-five pages, worthy of universal circulation. Cogent in contents as in title, the facts and the scandals on vaccination are herein in such wise presented as to satisfy the least possible doubt of every thoughtful and intelligent person on the importance, effectiveness and safety of vaccination in all its aspects. London: Smith, Elden & Co. Price one shilling.

"The Practitioner's Reference Book"* is a work of great convenience, and well-nigh indispensable to busy practitioners, when they have once become acquainted with it—a veritable abstract of the every day wants of all physicians. The more important additions to this second edition are: How to write Metric Prescriptions; Directions as to the use of the Hypodermic Syringe in diseases in which it is applicable; How to use a Galvanic Battery in Medicine and Surgery; How to Prepare Stained Sections of Animal Tissues; Reference Tables of size, weight and specific gravity of all the organs, etc., in the body; Ready reference tables of Antidotes, etc. The work is divided into four classified parts: (1) General information for the Practitioner; (2) Therapeutic and Practical Hints; (3) Dietetic Rules and Precepts, and (4) How to conduct a post-mortem. The parts are all well arranged for saving time, and every one complete in itself.

Publications Received.—De Lesseps Canal in Relation to Health, G. H. Boyland, M.D.; Annual Report of Retreat for the Insane, Hartford, Conn.; Mrs. Amelia Lewis' How to Live in Summer; Public Health and Sanitary Reform, a sermon by Rev. Chas. Hawley, D.D.; Articles on Dew, Christian Standard; Measles Not a Trivial Disease, J. H. Raymond, M.D.; Percy's Pocket Dictionary of Coney Island; Division of the Sphinctur Ani Muscle, Chas. B. Kelsey, M.D.; Leonard's Dose-Book and Anatomist; Aurora City Officers' Report, 1879-'80; Hyoscyamine, J. C. Shaw, M.D.; Bible Hygiene, by a Physician, Presley Blakiston; State Board of Health Register of Physicians, Illinois; Johnston's Chemistry of Common Life, D. Appleton & Co.; Corfield's Lectures on Health, D. Appleton & Co.; Health Primers: Personal Appearances, Baths and Bathing, and The Skin and Its Trouble, D. Appleton & Co.; Nature's Hygiene—Ballière, Tindall & Cox, London.

---

* By Richard J. Dunglison, A.M., M.D., Editor of Dunglison's "Medical Dictionary," Secretary of the American Academy of Medicine, etc. Second edition; revised and enlarged, 8vo., pp. 476. Philadelphia: Lindsay & Blackiston.

THE SANITARIAN.

A MONTHLY MAGAZINE.

Vol. VIII. OTCOBER, 1880. No. 91.

ARE THERE DISEASES OF ACCLIMATION?*

BY DR. A. FERNANDEZ-CARO.

Translated from the *Boletin de Medicina Naval*, by T. P. CORBALLY, A.M., M.D.

All sciences, and especially Medicine, hold many principles, established either by time or by usage, which are not confirmed by observation nor by experience; and so great is the influence which those ideas exert on the imagination that, men of inquiring and reflecting minds, often form conclusions which have no other foundation than the preconceived notions to which they have subjected their better judgment.

Medicine, like all those sciences which are not based on general laws, is the offspring of analysis and of observation; but to discriminate between the true and the false, or to establish the relations between cause and effect, is a very difficult task, and one that needs the co-operation of many individuals, and a series of conditions not very commonly found among persons who are simply observers. Hence the impossibility of defining things accurately in medicine, and the confusion which we find in all authors who, with more or less success, have been engaged in the discussion of the diverse and interesting questions relating to the study of the physical man—that is—to biology.

We do not at all deny the utility of theory; nor do we see any incompatibility between theory and practice. These are two things which mutually assist each other. Practice always presupposes a knowledge of the theory; and, even those least given to theorize, always act in accordance with principles previously established. Sometimes, however, we meet with facts regarding which we have not sufficient data to enable us to form accurate and well-defined theories; in such

* *¿ Existen Enfermedades de Aclimatacion? Boletin de Medicina Naval*, Periodico Oficial del Cuerpo de Sanidad de la Armada.—Director DR. D. JOSE DE EROSTARBE, Sub-Inspector de segunda clase, etc., etc. Administrador, DON RAFAEL GRAS, Medico Mayor.—Tomo III., Num. 6, Junio de 1880. San Fernando, Establecimiento Tipográfico de Don Jose Gay, Impresor de Cámara de S. M., 1880.

cases practice leads one to such conclusions as naturally result from observation, but then this constitutes experiment rather than practice; it is an act more or less empirical which, if frequently repeated, contributes to the formation of a new law or the modification of laws already established. The process of analysis and of experimentation, that is of induction and deduction, applied to medical art ought to be, for the same reason, the foundation, the base of all the investigations which the scientist has to make, in order to arrive at truth and certainty.

Having premised thus much, we are now about to consider a question which is generally accepted in the affirmative, a conclusion which, in our judgment, is essentially erroneous: *Are there diseases of acclimation in tropical climates?*

All organized beings possessing the power of locomotion, possess also the ability to remove from one locality to another; thus men and animals frequently change from one climate to another; but the animal obeys its instincts which impel it to flee from the cold, in order to seek for food or to provide for reproduction; while man is, among all created beings, the only one that has the power to transport himself to all parts of the globe with a definite object, of which he is fully conscious. The animal migrates, man immigrates, says M. Le Roy de Mericourt, and there is the same distinction, in the physical order, between migrating and immigrating that there is in the moral order, between instinct and intelligence.

The exterior influences surrounding man, vary sensibly in different localities; and the conditions relating to the soil and climate, present differences as remarkable as are found between the frozen seas of the poles and the suffocating winds of tropical climates. The system, habituated to a certain kind of functional existence, in accord with the medium in which it exists; born, so to say, in conditions suited to a determined medium, cannot, with impunity, change the conditions of its existence and submit to variations which will be more or less great according to the circumstances peculiar to each individual. As M. Boudin has very justly observed, "the manifestations of life and of death, of health and of sickness, vary with the climate and the soil, with the race and the nationality."

The successive changes through which the organism passes before it becomes adapted to new relations of climate, constitute the phenomena known as acclimation and the individual is said to be acclimated, when his organism has undergone such changes as are necessary to accommodate it to the functional conditions imposed by the new climate. But the phenomena of acclimation need not necessarily be accompanied with appreciable manifestations of the changes that are taking place, and the process of physiological acclimation may go on, and the individual remain entirely unconscious of any alteration in the economy or in his mode of existence.

This, however, is not the general opinion; and the prevailing idea on this subject forms the special object of our present inquiry. Nearly all authors and the greater part of physicians, consider acclimation the result of changes, more or less appreciable in the system. According to M. J. Rochard, "acclimation is the sum of the changes which the system undergoes, in order to become adapted to a new

climate."* According to M. Bertillon, "it is the spontaneous evolution by means of which an organized body transported to a new climate, is placed in harmony with new functional conditions;"† both of which definitions presuppose the occurrence of various changes to be effected before obtaining the final result; that is to say, becoming adapted to the climate.

Hence originated the idea of those diseases called of acclimation, a name by which is designated various affections of warm climates which, for our part, we consider simply as endemic diseases, arising from the conditions of the soil, and which offer a constant and active obstacle to the acclimation of Europeans in tropical climates. If it were merely a question of names, it would be a matter of the greatest indifference by what title these endemic diseases were designated; but, as is very evident, the precautions to be taken and the hygienic regimen to be adopted vary much, according as persons form a favorable or an adverse opinion as to the probability of these diseases of so-called acclimation giving permanent immunity to the person to be acclimated.

If we were to admit the existence of diseases of acclimation, we would define them by saying that they were certain functional disturbances, more or less great, caused by the action of the climate on persons not habituated to it, and which, when once experienced, leave in the organization a special immunity, not only against the diseases suffered, but against all the other endemic diseases of the country. It is well known that some diseases attack the same individual only once, while other affections offer a sort of antagonism, in consequence of which they mutually exclude one another. This antagonism is a principle, in virtue of which a peculiar diathesis or some morbid state of the system confers on the organism an immunity, more or less perfect, against certain pathological manifestations.—(Boudin.)

In pathology it is much more difficult to establish negative facts (hechos) than to affirm positive principles; thus, while the predisposition to a given disease may be admitted unconditionally, antagonism, as a cause of immunity from disease, is only a hypothesis, to be conditionally admitted. The principle of antagonism of certain races to particular diseases must be accepted, in view of the immunity which certain races of one country possess from them, while the liability of other persons, lately arrived, to contract those diseases is unquestioned; but this subject is too intimately connected with the influence of acclimation to permit the boundaries between what belongs exclusively to the individual and what is peculiar to the action of the climate, to be accurately drawn. It is certain that the morbid receptivity varies with the race; and it is also a fact which observation has confirmed, that in the same race the degree of morbid receptivity varies according as there is a greater or less affinity in the climate in which the individual was born, to that in which he is going to live. This predisposition continues to diminish in the newly-arrived person in proportion as, in the course of time, he becomes better adapted to the new climate. Even the native may lose his immunity when he leaves his native country for a length of time; so that,

* Nouveau Dictionaire de Méd. et de Chirurg. Pratiques, art. *Acclimatement*.
† Dict. Encyc. des Sciences Méd., art. Acclimatement.

from a pathological point of view, people are very apt to confound differences of races with differences of climates. Science on this point, as on all that appertains to acclimation, has much yet to determine.

Let us examine now, in view of the definition we have given, whether the diseases of warm climates offer any antagonism one to another, and if a disease once endured leaves the foreigner in a condition favorable for becoming acclimated.

Of all the diseases peculiar to tropical climates, those of miasmatic origin are the most important. From the action of the heat and the moisture, combined with the electric tension of the atmosphere, there results a most luxuriant vegetation; plants of innumerable variety spring up, grow with extraordinary rapidity, and decay on the same soil where, often, neither light nor free air can penetrate; myriads of insects grow and multiply in the midst of this vegetable world, and the combined action of the decayed vegetation and the remains of insects and animals abundantly enrich the soil whence springs this terrible scourge of tropical climates, miasmatic diseases. In the countries in which these infectious germs abound, acclimation is impossible. We do not admit, with M. Foussagrives, that the system can become habituated to miasmatic diseases—a process which he designates by the very ingenious term *Mithridatism;* for even the appearance of the natives of the infected districts clearly shows the contrary to be the fact. The habit of breathing the miasmatic air, so far from lessening the morbid susceptibility of the system, increases the tendency to contract the disease. Thus we see that fevers attack the natives of the malarial districts, while the newly arrived preserves his immunity, for a time, more or less great, in proportion to the degree of vital resistence he possesses, and to the more or less favorable condition of his system and to the nature of his personal habits. A single attack of fever is sometimes sufficient to destroy this immunity. Intermittent fever cannot be considered as a disease of acclimation; firstly, because, as we have just said, the natives are as liable to it as Europeans; and, secondly, because they afford no protection against the other endemic diseases of the country. M. Jourdanet has said that intermittent fevers are preservatives against yellow fever; but so far from there being any incompatibility between them, we have often seen attacks of intermittent fever during the stage of convalescence from yellow fever, and in some cases accompanied with all the characteristics of pernicious fever. We remember one very remarkable case in our own practice, in which, after an attack of well-marked pernicious fever of the apoplectic variety, an attack of equally well-marked yellow fever followed. M. Dutrouleau* describes an epidemic of yellow fever, during which persons died who had been more than five or six years in the country, and many of them died from anæmia, and all of them had had the endemic miasm.

Nor is there any antagonism between dysentery, hepatitis and the malarial cachexia. Every day may be seen coming to our hospital, patients from Cuba or the Philippine Islands, in whom may be found this trilogy of diseases, all uniting to bring about a fatal termination. M. Boudin has laid down the principle of antagonism between marsh fever, phthisis and typhoid fever. He says: "The exciting cause of

* Mémoires de l'Académie Impériale de Médicine, 1858.

intermittent fever impresses on the individual a profound modification, which makes those two affections very rare, in places in which the first predominates." This theory has been so successfully refuted by a great many authors that it is quite unnecessary to adduce further arguments against it.

To what extent may anæmia be considered as a condition favorable to tropical acclimation? In warm countries, and especially in places situated on the coast and near the level of the sea, anæmia is a very general affection. The excessive heat, a constant electric tension and an excessive atmospheric pressure tend to impoverish the blood and to weaken the individual. But anæmia, however common it may be, does not constitute the normal condition of the inhabitants of the torrid zone; anæmia is there, as it is here, a disease; and a disease, so much the more to be dreaded, because the tendency of the climate is to render its progress more rapid; and the proof that anæmia is not a desirable condition, even in a mild form, is found in the fact that the doctors, in those latitudes, combat it with every means at their disposal. Perhaps there is no part of the world in which a greater quantity of ferruginous preparations is used, than in these tropical regions, and so prejudicial is anæmia to the healthy action of the vital functions that we have seen, in our own quite extensive practice in these latitudes, that, as soon as this condition began to manifest itself, the individual contracts a much greater prodisposition for all the other endemic diseases of the country. So long as the individual remains vigorous and robust, we see him resist dysentery and malarial fevers; but, as soon as his blood begins to be impoverished, the enchantment seems to be dispelled, and once the plasticity of the globules becomes diminished, the different diseases peculiar to the locality soon make their appearance. In such conditions, we consider the individual *not acclimated*, but *unacclimatable*, and we see no other means for him to escape a fatal disease than to return to his native country.

It is undoubtedly true that persons possessing little of the sanguine temperament and of weak constitutions, have *less* predisposition to yellow fever than the vigorous and robust; but, yellow fever is not the only disease found in tropical climates. Are malarial affections, diseases of the abdominal viscera, dysentery, affections of the nerve centres, and many others which we need not mention, of no account? Besides, has it ever been proven that the anæmic person is exempt from yellow fever? We could give many cases in our own practice which prove the contrary; among others, that of a surgeon in the navy, who came to the hospital, attenuated with an old syphilitic disease. Attacked with typhus icterodes, the first stage of which lasted scarcely twelve hours, during which time a moderate febrile action was developed, and at the end of two days he died with profuse hemorrhage. The anæmia, instead of preserving him from the disease, served only to hurry it to a fatal termination. We have had, also, the opportunity to observe two other similar cases, in sailors suffering from marsh fever. We remember, too, our soldiers in Cuba. Weak, attenuated, badly clothed, worse nourished, exhausted with fatigue, worn out with fever; we saw them in the hospital at Nuevitas, which in the year 1877 contained as many as 1,200 patients. Every day numbers of these unfortunate men, suffering from typhus

icterodes, who had obtained no protection from their broken down constitution nor from anæmia, applied for admission. Besides, we must not mistake the lymphatico-bilious temperament of the native of the Antilles, for anæmia. We have never seen this pretended analogy between impoverishment of the blood and any kind of temperament. Temperaments, of whatever kind they may be, are a physiological condition, and a deficiency of blood or a diminution of the blood corpuscles, is always a disease ; a given temperament is always more or less suited to a given climate ; but a diseased condition is suitable to no climate. Anæmia, therefore, so far from being an indication that we are acclimated, is evidence of the incompatibility of our organization with the conditions of the climate.

Yellow fever is a gigantic spectre which terrifies the European, who emigrates to the Antilles, even in his dreams; it is the disease which, of all others, is considered the *desideratum* of acclimation. The individual who has passed safely through this ordeal, the Caudine Forks of the American climate, thinks himself enabled, for the rest of his life, to live in these tropical climates with perfect safety; it is the envied condition which is sought after by all. Yellow fever is, according to Meaher,* "the means which nature employs to convert the sanguine temperament of the European into the lymphatico-bilious, the only one which is compatible with the climate of the colonies." If this were the case we would be forced to the conclusion that nature was very exacting, and granted the privilege of living in warm climates only under the most severe terms. M. Gaston† says "that yellow fever is not a miasmatic disease, but the result of the strife that the organism of the European, not acclimated, is obliged to sustain against the natural influence of a climate which is to him entirely new." Both these theories prove, most conclusively, 1st, that the nature of yellow fever is not yet well defined, and 2d, that the idea of functional disturbance is the prevailing one in all these questions of acclimation.

We will not enter into any discussion regarding the nature of yellow fever, because it is foreign to our present purpose, and because, in so short a space, we could not discuss a question so complicated; but we will say that, in our judgment, typhus icterodes cannot be considered a disease of acclimation. If this were the case, if yellow fever resulted only from the struggle between climate and the organism of the European, this disease would be constant, and be equally severe at all times, and would prevail in all localities possessing similar conditions of climate, and yet this is not the case; yellow fever has its centre of predilection, which is the gulf of the Antilles; there it originates and thence it spreads; its intensity is variable, and its appearance inconstant and uncertain. It is not known, even as an epidemic, on the coast of India, which possesses a similar climate, with telluric and meteorological conditions similar to those of the coast of Central America, on which equal differences divide the temperament and the race of the European from the temperament and the race of the native.

On the other hand, the fact that a person has passed successfully

* Meaher fièvre jaune, pag. 67.
† Gaston, fièvre jaune, thèse de Montpellier, 1858.

through an attack of yellow fever, does not prove that he is acclimated; the only safety the disease affords is protection against another attack. To consider that yellow fever confers full acclimation is to confound immunity from a particular disease, with acclimation. Yellow fever attacks, preferably, those persons whose temperament and organic conditions are most removed from the conditions peculiar to the climate; and so far is the attack of fever from making the person who has had it acclimated, or in a better condition to bear the severity of the climate, that it causes rather a greater predisposition to the other diseases of the country—to malarial fevers, to diseases of the stomach and liver, and to the anæmia of tropical climates, all of which are not unfrequently the consequence of that terrible disease. If, then, yellow fever does not afford any protection against other endemic diseases, if the individual is equally at the mercy of the climate, wherein resides its power to render the individual acclimated?

What shall we say of the disease technically called fever of acclimation? What are its symptoms? What are its characteristics? To what nosological group does it belong? This disease, which the greater number of those who have emigrated to the Antilles claim to have had; this disease, which so many doctors claim to have studied, is a myth; there is no such thing as a fever of acclimation. With what justice, with what propriety, can they dignify, with so imposing a title, an indisposition to which the newly-arrived immigrant is exposed in tropical climates? If a person, either from the effects of the climate or from some disturbance of the nervous system, is taken with a fever that lasts a day or two, it is called the fever of acclimation, and this new Proteus, this fever of acclimation, puts on as many forms as there are different conditions that modify, more or less lightly, the health of the individual, who, for the first time, has placed his feet on the soil of the tropical climate. Is it logical to suppose that a disease which has no distinct symptoms, which is deficient in special characteristics, which never endangers the life of the individual, can exert a modification, so great and so important in the economy, as, of itself, to bring about a physiological adaptation of the system to all the conditions of the new climate? Has any physician ever observed the slightest antagonism between such a fever and the various endemic diseases of the country? In what, then, does this virtue of acclimation consist?

We believe it is now time to dispel this error, which is the more dangerous because it serves to inspire an unwarranted degree of confidence, which makes the immigrant frequently forget the only amulet which we know capable of preserving him against the effects of these climates—a strict attention to hygiene. The man who loses this salutary fear of the terrible diseases which threaten him in tropical climates, is apt to give himself up to all kinds of excesses, and to abandon himself to all the enjoyments which such a climate naturally holds out to him. This so-called fever of acclimation may be of a gastric, a bilious, or an inflammatory character, of short duration, always light, due to some purely accidental circumstance, and its action on the economy is generally trifling or absolutely negative. If, however, we do not go so far as to deny to it any influence whatever, if we concede to the disease some influence, it is purely accidental, and

is never sufficient to determine the slightest modification in the condition of the individual.

We have named the diseases that most frequently occur in the course of the so-called acclimation. In order to give greater distinctness to our propositions, we will formulate them in the following manner:

1st. There are no diseases of acclimation.

2d. The endemic diseases of warm countries, far from presenting any antagonism, may coexist simultaneously in the same individual.

3d. The fact that one has had any of the endemic diseases, even yellow fever, so far from constituting any evidence of acclimation, proves rather that the organic conditions in the individual are not capable of being brought into perfect harmony with the conditions of the climate.

4th. Acclimation may be complete without necessarily causing any modifications in the health of the individual; just as grave disturbances may occur, without rendering the person acclimated. In a word, the less change a person is conscious of, in his system, from the effects of the climate, the more effectually is he acclimated.

These are the conclusions we have arrived at, after careful study and long-continued practice. The problem of acclimation will be solved with difficulty, so long as it is studied superficially. If we desire to arrive at scientific conclusions, such as will have the merit of probability, if not of certainty, it will be necessary to subdivide the question into separate heads. The geographical classifications applied to the study of climatology lead always to error, because, in any particular zone, many circumstances may change the atmospheric and the telluric conditions. The study of the atmosphere must be taken as the starting point, and it is the only one that enables us to obtain a satisfactory knowledge of climates, in a medical point of view. The atmosphere acts on the economy by its density, its temperature, and by its chemical constitution. The density varies with the elevation, the temperature with the latitude, and the chemical composition depends on the nature and quality of the miasmatic exhalations which arise from the soil.

The favorable influence of elevated situations has been recognized by nearly all authors. Humboldt states that planes, situated at an elevation of 1,500 or 1,600 metres (4,921 to 5,249 feet), above the level of the sea, were the most favorable for Europeans. Boudin, too, assures us that, if elevation does not entirely destroy the pernicious influence of tropical climates, it can certainly modify them very much. At this elevation we may enjoy, in the torrid zone, a temperature of 15° to 20°, centigrade (59° to 68° Fahr.), that is, the climate we would have at the level of the sea, in temperate latitudes. There are some, however, who have denied the hygienic value of elevation. M. Jourdanet* asserts that elevated regions are as dangerous for Europeans as the sea coast; and M. Gaston† supposes that, in consequence of the great humidity and the constant fogs that surround the elevated regions of America, "fatal hepatitis, diarrhœa, dysentery and

* Le Méxique et l'Amérique tropicale, *climats, hygiène, maladies*. Paris, 1864.

† Des climats de la zone tropicale, *thèse de Montpellier*.

severe bilious affections will prove fatal to many Europeans who resort to those places to find a refuge from yellow fever." On this point we think it is impossible to arrive at definite conclusions until the question has been more fully determined by time and experience. For our part, we think that at an elevation of 800 to 1,000 metres (2,498 to 3,116 feet), the conditions of tropical climates are very much modified, and we believe that the dangers pointed out by MM. Gaston and Jourdanet are very much exaggerated. If the altitude does not fully compensate for the latitude, it undoubtedly contributes to lessen the dangers. Unfortunately, however, commercial interests always oblige Europeans to settle on the sea-coast, where the probabilities of becoming acclimated are very doubtful.

Temperature does not, in itself, cause the most serious obstacle to acclimation. Men are capable of enduring great extremes of heat and cold without serious danger to their health. The difficulty of living in the immediate vicinity of the poles does not arise so much from the low temperature as from the difficulty of finding an abundant supply of suitable food. But in regard to heat, apart from some slight functional changes, the system soon becomes accustomed to it, and it is borne with safety.

Not so with impure air; and those countries in which the soil produces the seeds of dysentery, of malaria, of yellow fever, or of cholera, will ever be dangerous for Europeans, who will never be able to adapt themselves to such conditions permanently. The only means of adapting the European to the unhealthy conditions of the tropical climates is by *crossing* the races; but this method, though it may be applicable to animals, can never become practicable in the human species. Man's individual liberty, religion, morality, social interests, all present obstacles which can never be overcome by the *naturalist* nor the *biologist*.

———o———

A Remedy for Mildew.—Dr. James Blake, in the *California Horticulturist*, says he has found a solution of bluestone, a tablespoonful to a bucket of water, makes a wash that will destroy mildew upon rose bushes and other plants, without injuring them in the slightest. He has used the bluestone wash to destroy the smut fungus on wheat with abundant success. It was this fact that led him to use the same substance for his rose bushes, and the result has been that they have been almost entirely free from mildew, and have blossomed profusely, while before, hardly a bud arrived at perfection. Mr. Blake says: Whether this is owing to climatic causes or the result of bluestone, he is unable to say, as he has no horticultural neighbors. Of one thing, however, he is certain, that the bluestone is a direct poison to the mildew, as he has dipped some flower buds, which were hopelessly mildewed both at stem and calyx, into a solution of bluestone, and they subsequently developed into almost perfect flowers.

ISTHMIAN SALUBRITY AND THE PANAMA CANAL.

By GEORGE HALSTED BOYLAND, M.A., M.D., etc.

The construction of a great international work like that of the Panama Canal cannot be without direct and immediate influence upon both domestic and foreign public health and well being. The sanitation of the Isthmus of Darien, with reference to the spread of disease and the benefits arising therefrom to its inhabitants, as well as to foreign nations, is certainly not the least important of the different scientific aspects in which the subject has been studied. The advantages accruing to sanitary science by the building of an interoceanic canal through the malarious neck of land uniting North and South America were first presented in the July number of the *Independent Practitioner*. That article (contributed by myself) was based upon reports and statistics from savans and eminent authorities on hygiene, and upon the report of the "International Technical Commission" for the definite work of the canal, kindly forwarded me in correspondence with M. de Lesseps from Chicago, during his recent visit to this country, and personal knowledge acquired during a visit to the Isthmus. A further consideration of the subject leads to the belief that the Isthmus of Darien, purged of miasma by the drainage system and by atmospheric influences of the canal, may become, in course of time, a health resort for invalids, and a delightful country for pleasure-seekers and tourists in the tropical zone, who would enjoy a soft and even temperature in the wooded hills, green valleys and winding streams of a region where nature has bestowed her choicest beauties with a lavish hand. Such advantages ought to be sufficient to induce an intelligent people to give their support to the enterprise, leaving commerce (which will gain pre-eminently) out of the case, especially when they are offered in the form of a safe and well-paying investment, within the reach of every one.

The *North American Review* for July, 1880, contains an article by M. de Lesseps, in which he touches upon the "insalubrity" of the climate of the Isthmus of Panama, and states that he accompanied the committee thither with his family; their perfect health the while and subsequently, upon their return to Europe, shows how unjustly that beautiful climate has been condemned, etc.

The circumstance that a large and distinguished party spent a considerable time on the Isthmus without contracting malarious disease, as well as the fact that thousands of passengers traversed it annually on mules before the railroad was built, corroborates the testimony of other eminent scientists, that individuals may pass through a malarial district, and even remain in it for some time, without being subject to its evil influences, which find expression chiefly upon the natives and foreigners who have resided there for a protracted period. But these latter, although they may partially resist the deleterious effects of miasma, can never wholly accustom their natures to it.* Again,

* Dictionnaire d'Hygiène Publique et de Salubrité, Tardieu. J. B. Baillière et fils. Paris.

Niemeyer, in common with most authorities on the practice of medicine, confirms the same view. He remarks: "An accommodation of the organism to the poison takes place only in so far that some individuals, who have been exposed to the same a long time, are not affected with well marked intermittent fever; but with a feverless, cachectic languor, accompanied by enlargement of the spleen."*

This cachexia without fever is quite common among the inhabitants of miasmatic regions—it being also well known that the poison in some cases may remain in the system for weeks, or even several months, without manifesting physical expression. The good health of the committee that passed fifty days in prosecuting its labors on the Isthmus is not an exception, but an illustration of a long-established principle with regard to malarious infection.

The opposers of the Panama Canal argue that there will be a high mortality rate during its construction, adducing in evidence the number of lives lost during the building of the railway. The case is not a parallel one at all, as the grading and cutting of a railway must of necessity have but little influence upon the general soil and atmosphere; moreover, the high rate of death during the construction of the Panama Railway was, doubtless, owing to the fact that the coolies imported to carry on the work were landed from ships where disease already existed, and where many of their number had died during the voyage into a country calculated to keep disease alive, and which of itself gives existence as much to yellow fever as to a low type of typho-malarial fever. With the canal it will be entirely different. As soon as the work of draining and dredging commences, their beneficial results will begin to make themselves felt; as the work proceeds they will become more and more marked until completion is reached, when the source of the evil will have been entirely overcome; for as drainage is carried out, malarious diseases disappear. We may then safely predict that mortality along the line during the construction of the canal being rapidly reduced to a minimum, will become restricted to those misfortunes that sometimes happen while public works are in process of construction in any country, such as accidents from machinery, stone, etc. The question of becoming accustomed to the climate thus falls to the ground; and with the great regard for human life, for which the French are so justly celebrated, the probability of accident will be exceedingly small.

The approximation to the vast quantity of salt water to be conducted through the canal, and the consequent salubrious atmospheric effects now becomes more exact, as we are able to state that the length of line of the maritime canal from the Bay of Limon to the anchorage of Flamenco in the Bay of Panama, will be seventy-three kilometres. June 15th, 1880, the Chamber of Representatives of the United States of Colombia passed a resolution upon an official note of the Senate of Plenipotentiaries, congratulating M. de Lesseps on the very near commencement of the work that is to open a new era to America—an era of public health and happiness, as well as one of

* "Eine Accommodation des Organismus an das Gift findet nur insofern Statt, als manche Individuen, welche demselben lange Zeit ausgesetzt waren, nicht an ausgesprochenen Wechselfiebern, sondern an einem fieberlosen, mit Vergrösserung der Milz verbundenen, Siechthum erkranken." Vol. II., p. 697.

great commercial prosperity. The necessary capital being promised in different countries and the final survey made, the work, in reality begun, will be vigorously pushed forward to the end. The French Academy of Sciences has approved the very commendatory conclusions of Baron Larrey upon the work, submitted for his approbation by Dr. Companyo, and relating to the organization of the sanitary service of the Company of the Interoceanic Canal of Panama during the period of the works. Dr. Campanyo endeavors to refute what he considers "certain accredited errors," with reference to the supposed insalubrity of the Isthmus, but proposes to establish hospital posts at Colon and Panama; indicating, at the same time, the utility of a large sanitarium for convalescents, with the object of protecting the work-yards from every possible unsanitary influence. He also suggests exercise grounds and the cultivation of nurseries, of sanitary plants and kitchen gardens, and the raising of herds and flocks for food. The necessity of vaccination of the employees is dwelt upon, and to this end a vaccine farm suggested. He expounds and insists upon the principles of hospital hygiene in their application to the establishments of the Isthmus, and, in connection therewith, the cremation of the dead instead of burial. Dr. Campanyo evidently appreciates the natural insalubrity of the Isthmus, of which M. De Lesseps after making mention of the forests and marshes in his report during the séances of the Academy, July 26th and August 2d, 1880, said: "The rain, the yellow fever, the excessive heat and insects at some points, render the sojourn there painful and very dangerous during certain seasons."* All such measures of sanitation, however, occupy a secondary position to the grand work of dredging and draining and introducing through the Isthmus an immense body of salt water, which, combining its influence with the effects of soil drainage, will, in the end, it is reasonable to suppose, render that picturesque region perpetually salubrious.

The first results, then, and they, too, almost immediate, will be of great hygienic importance.

As for the prolongation of individual life, the health of a people and the well-being of nations, it is in sanitary science that the means must be sought. In it they have been found, a titanic practical demonstration of which is about to be had in the construction of the Panama Canal. The success of the enterprise is assured, thanks to the corps of engineers, who have surmounted all technical difficulties. Not only will the isthmian region be reclaimed, but the Pacific coast is called to a magnificent development. California, the most fertile country in the world, the beautiful and rich territories of Oregon, Washington, Vancouver, and even Lower California, to-day almost completely abandoned. The words which Gœthe spoke to Humboldt in 1827 are realized: "One day will arise an initiative genius to pierce the two isthmuses that present an obstacle to navigation around the world."†

* Comptes rendus. A. X. C. I.

† "Un jour, il surgira un génie initiateur pour percer les deux isthmes qui font obstacle à la navigation autour du monde."

HOMES FOR THE PEOPLE.

By Gen. James Bintliff, of Darlington, Wis.

This is an all-important subject, and one which can only be approximately dealt with in a brief paper, such as is now offered; the writer will, therefore, confine his attention mainly to the position and construction of dwellings, although other questions arise and are glanced at incidentally.

Homes for the people are largely determined by circumstances beyond individual control. In all historic time, commercial facilities have located centres of population; and, in all probability, will continue to do so forever, so that it is fortunate for the human family that unhealthy conditions of soil, water and air, are capable of great modification by means within human control. The city of Chicago, which is built upon land much of which was formerly overflowed during periods of high water, is now, so far as returns and computations of population can be relied on, in fair hygienic condition. It is claimed by the health department of that city, in the comparative table 1868 to 1878, a term of eleven years, that the average of deaths has been reduced from 23.74 in the 1,000 population in 1868, to 16.50 in the 1,000 in 1878. These figures are so extremely favorable as to the progress of sanitary reform, that they suggest reasonable doubts as to the reliability of the data. The statement of the number of deaths is, doubtless, accurate; but the increase of population from 252,054 in 1868 to 450,000 in 1878, is open to doubt, more especially when it is borne in mind that no enumeration of the population of that city has been made since the State census of 1875. The school census and computed ratios of increase cannot be accepted as conclusive; and one feature in the estimate which considerably abates its value, is the fact that a large percentage of the enumeration is based upon a moving or fugitive population, the mortality risks of which have appeared elsewhere. The value of the mortality statistics of cities would be immensely increased by a separation of the transient from the resident population, and by a division of the more and less healthful districts, so as to indicate the imminence of necessities for hygienic improvement in each locality.

Positions at one time salubrious, grow less and less healthful every year, unless means are continuously employed to maintain hygienic conditions. No more apt illustration of that fact need be sought than is furnished by the city of Boston in its table of mortality in children. During ten years from 1820, the deaths of children under one year old was a fraction under 9 per cent. per annum of the gross total of deaths. The succeeding decade from 1830 registered an increase to 12.66 per cent. That from 1840 showed a small deterioration of vital force, making the figures 12.76 per cent. The next ten years, commencing with 1850, developed infant mortality to an amount nearly two-fold of the average of the preceding decade, or 23.84 per cent.; which increased to 25.40 during the ten years from 1865, and has since that time varied but little, ranging from 28.19 in

the worst single year, to 23.9 in the most favorable, down to 1877. During the same term of years the percentage of deaths under five years of age increased from 26.69 per cent. to 40.94; the highest average being in the decade commencing with 1850, and reaching 46.49 per cent. Greater densities of population, the permeation of buildings with poisonous exhalations inseparable from occupation where adequate ventilation is not provided, and the contamination of the soil from the lack of drainage or from imperfect drainage, are doubtless answerable for the indicated increase of the death-rate among children. Boston compares favorably even now with the large percentages of infant mortality enumerated in New York City, Cincinnati and Cleveland; as in the first named city, from 1866 to 1872, the mean of deaths under one year was 30.5 per cent., and of deaths under five was 50 per cent. In Cincinnati, during seven years ending with 1873, the mean of deaths under one year was 25.5, and under five years 48.1, while in one year, 1869, deaths under five reached the terrible aggregate of 51 per cent. In Cleveland, also, deaths under one year, in 1873, after deducting still-births, amounted to 29.5, and under five to 49.1. The latter figures are quoted to relieve Boston from being regarded as phenomenally unhealthy; the main point being to show that, under ordinary circumstances, increased density of population tends toward an increased rate of mortality, whatever may have been the original advantages of position. With the methods of building which generally obtain, the area over which population is spread is found affecting the death-rate with great regularity.

In the year 1857 the annual death-rate for the rural districts of England and Wales was 17 per 1,000 of the population, the aggregate being 9,750,000 people, distributed over 350,000,000 acres, giving nearly 36 acres to each person; during the same year the mortality in towns and cities among a population aggregating 8,250,000, located on lands amounting in all to 2,150,000 acres, or rather less than four persons to one acre, was 25 per 1,000, or on the total number from overcrowding alone, an aggregate of 68,000 preventable deaths per annum. The same law of an increasing death-rate resultant from overcrowding was illustrated during the cholera year, 1854, in the same countries. There were 134 districts in which the population averaged 915 persons to the square mile; 404 districts in which the density of the population was only 225 to the square mile; and 85 districts in which there were only 122 persons to the square mile. The death-rate from cholera was *nil* in the 85 districts sparsely peopled; 7 in the 10,000 where the population was 225 to the square mile; and more than nine times that number, or 65 in 10,000, in the more densely peopled districts. The bearing of such figures can hardly be questioned.

We do not from these startling results arrive at the conclusion that city life is *per se* destructive to vitality. There are already abundant statistics to render any such idea impossible, for the well-informed mind; and whenever the tables of mortality for cities shall be compiled on plans adapted to show the health and life rates obtaining in different localities, more and less favored by position, by construction and ventilation of buildings, by area of breathing room, by effi-

cient sewerage and by meteorological conditions, we shall find a much more effective reply to such a conclusion. Some of the best results recorded as to vitality are found in towns, and may be illustrated by a few figures submitted to the Social Science Association by Mr. Michael, the Mayor of Swansea, Wales. That gentleman caused the vital statistics of Swansea to be divided according to the respective densities of population; and he found the A division, resident in superior houses, apart from each other, or standing on their own grounds, subject to a mortality of only 11 in the 1,000 per annum; while the C division suffered a mortality of 36, or nearly 3½ the minimum; and the intermediate density lost 20 in the 1,000, or 9 more than the A division. It is claimed by some writer that the human race would be extinguished in less than two centuries if confined to large cities; but, manifestly, that would depend upon the conditions by which they were surrounded, as the Swansea A division compares favorably with suburban vitality, and there is no reason known among men, why every man, woman and child should not have a never failing supply of pure air.

London shows an aggregate of 10,000 deaths per annum in excess of births; but there are parts of London that are as favorable to longevity as those occupied by the A division at Swansea; and in the worst cities, hygienically considered, length of life is found dependent upon individual action, in a very great degree. For very many centuries the Jews were systematically persecuted by governments and people all over Europe, condemned to live in particular quarters in all the principal cities, and robbed without scruple by the ruling class if they were so ill-advised as to make a show of comfort or wealth. Under such and manifold other disadvantages, they adhered more or less strictly to the rules of life with reference to personal purification, laid down for them of old time, and we find them leading the whole human race to-day in the essentials of vitality. Prussian statistics show that the mortality per year among 100,000 Jews is less by 800 than the deaths in the same term among the same number of Christians; the numbers being 2,161 Jews to 2,961 Christians; and in every particular the chosen people manifest greater powers of endurance. A few results obtained from 100,000 on each side will show how complete and advantageous is the contrast favoring the Jews. There were among the Christians 143 still-births; among the Jews, 89; a difference of 54 to our disadvantage. It might be supposed that the decreased number of still-births would be offset by a larger average of weakness in the offspring of Israel. But precisely the reverse is the fact, as only 453 children of that race die under one year, while 697, or more than 50 per cent. above the Jewish average, die in the first year out of the aggregate of Christian births. In the four years next ensuing, 386 Jewish children die, the offspring of Christians, already much smaller in number, still heading the death-rate by nearly 25 per cent., the numbers being 477. From five years old to fourteen, 151 children of the Jewish race fall out of the ranks, and one-third more, or 202 Christian children, die. From that age until twenty-five the Jews lose 125, the Christians 155.

During the twenty years ending at 45, there is a loss among the Jews of 231, and among the Christians of 334, or 103 in excess. So

marked was the exemption of the Jews from the plagues that decimated all nations during the middle ages, that they were charged with having poisoned wells and springs, and only active interference on the part of the authorities prevented a general massacre of the cleanliest people on the continent. These illustrations show the potency of their modes of life in warding off maladies, as well as sustain the proposition that men may make city life conduce to comfort and longevity by wisely controlling circumstances. Men need not fall victims to epidemics, although surrounded by evil conditions, unless they allow their physical systems to become weakened and their minds to sink into demoralization. Neither of these undesirable habits of mind and body were to be feared in the bright intellects and self-poised courage of that eminently deserving people, the Jews. Town life is not necessarily more brief nor less healthful than life in the country. The conditions of longevity can be fulfilled in one location as well as the other. In New York, in 1872, while one-half million showed a mortality of 21,550, the other half million suffered little more than half that number of bereavals, the actual figures being 11,097. The fatal errors which cause this distinction are such as society can, in the future, prevent. Dr. Grunhow, an eminent hygienist, submitted to the Social Science Association before mentioned, a valuable paper contrasting the mortality of Glendale, a healthy rural district in England, with the different commercial and manufacturing towns, and the figures are peculiarly instructive as to the work which remains to be accomplished, if town life is to become, in the large sense, as applying to the mass, compatible with health and vigor.

In Glendale, the rate of mortality observed during many years was 15.09 per 1,000, and in Liverpool, 36.35. In Liverpool the losses from pulmonary affections amounted to 1,000 in 100,000, to 216 in Glendale. In Glendale 40 children died of nervous diseases out of 100,000 population, and in Manchester 393, or nearly ten to one. Diarrhœal diseases, for many years in succession, in Glendale, carried off 57 infants, in a population of 100,000; and in Manchester, 1,945. Assuming a very moderate estimate of fourteen cases of sickness and prostration for each death, it will be seen at once that an enormous aggregate of preventable suffering and loss grows out of neglected hygiene. There is a terrible account to be squared between what is known to the rulers of mankind and what is the rule among the masses, when instead of the normal death-rate of 11 in the 1,000, in some of the worst streets of our large cities, the death-rate ranges from 35 to 90, with an average of 55. Alarmists answer the worst facts in town and city mortality by prescribing the abandonment of city life; but to advocate such a course is to be less wise than a child crying for the moon. A large percentage of mankind must live by commerce and manufactures. From the early beginnings of modern social life, in all prosperous countries, the law of gravitation toward centres of population has been increasing in power. In 1790, more than 94 per cent. of the population of the United States lived in the rural districts. That ratio was reduced to about 91 per cent. in 1840, and to 79 per cent. at the commencement of this decade—the momentum towards city and town life

steadily increasing to keep pace with commercial and manufacturing necessities.

In England 56 per cent. of the population live in towns and cities; and, in this country, we are steadily moving toward a similar result.

To meet the demands for improved conditions of life which this tendency creates, the popular mind must be instructed in a knowledge of those laws which govern the community for health or disease, supplemented by legislation in favor of a liberal minimum of space and breathing room for every dweller in towns; by cheap railroad transportation for the diffusion of town population in the suburbs of large centres, by authority conferred on boards of health to enforce the observance of hygienic law in the habitation of existing houses, where they are fit to be used as dwellings, and in their compulsory removal where they are unfit for human needs; and in procuring the observance of needful regulations in the erection of all new buildings. To allow our present system of living—or only half living, at the best—to continue, is to legitimatize the decimation of the people, and to give the approval of concurrence to infanticide and murder. The power and dignity of the State is involved in the physical and mental welfare of each member of the community; and no more important subject can claim the attention of legislators than that of providing the means by which these ends can best be secured.

The differences in value between town life and country life, in the main, are due to overcrowding in dwellings and to the crowding of dwellings themselves, so that the atmosphere and the soil cannot discharge their offices in surrounding living bodies with purifying influences. The practical work of boards of health must almost always be limited to the improvement of existing conditions; and yet, there are independent movements in other directions, which give large promise of efficient aid in reaching the same results for which health officers are laboring and which are deserving of the highest commendation. Among these is the effort instituted by Mr. Wasson, of Detroit, who is advantageously employing time and capital, in that city, encouraging the erection of homes by artisans for their own families; and other philanthropic men are following his example, so that up to the present time, by the means which they have furnished, about eight hundred houses have been built by workingmen for their own use. The removal of that number of families from competition for existing cottages and tenement houses, gives to the laboring class better opportunities to find homes without overcrowding, and supplies them with a higher standard of comfort. Mr. Wasson does not give to the purchasers of his lots anything beyond the opportunity to become their own landlords; but in so doing, he is in the best sense their benefactor, as they are not weighed down by a sense of obligation without an equivalent.

An allotment of land is sold for $400 on time, without any payment on account, a title to the property being given as soon as the proposed building is roofed in. Should the purchasers lose their employment for a term, they are not pressed for their installments, but, in the main, the payments are promptly made; and the class

thus assisted are leavening the whole mass of the citizens of Detroit. The small property owner is a great improvement upon the thriftless workman, who spends every cent of his earnings, when employed, because savings banks cannot be relied upon, and in the first wave of adversity becomes an insolvent debtor, or is carried away to increase the perilous army of tramps. In that aspect of the case, Mr. Wasson and others having the same objects in view, are engaged in a patriotic undertaking, whose value can hardly be overestimated, and a wise appreciation of such efforts becomes a duty from all who are interested in social science. Government in France considers such movements worthy of financial aid; and when the value of a proprietary populace is fully understood—how largely such a condition contributes to the peace, stability and healthful progress of society—men of wealth and governments will give more attention to the practical bearings of this subject.

Muhlhausen, in Alsace, is a workman's town; and is like'y to become more so every year. During the year 1853, building societies were formed there, which in eleven years built 1,088 houses, each house having a garden 36x30 feet, and these residences became the property of the occupant workmen upon payments of $1.15 per week, for a term of fourteen years.

Upon certain conditions, the government of France voted $2,000,000 to be loaned to such building societies, and the step in advance proved to be most beneficial. The government insisted as the price for its help in the undertaking, that the properties should be sold to workmen at cost; that the properties so acquired should be inalienable for ten years; that the interest charged on capital should not exceed four per cent., and that in the centre of the town there should be a public building, the cost of which should be spread *pro rata* on the whole undertaking; uniting under one roof, a reading-room, restaurant, bath-rooms, wash-house, and a store or bazar for the sale of articles commonly consumed, at wholesale prices, to workmen. One society alone, in Muhlhausen, the Industrial Building Society, working upon its own capital of $25,000 and a loan of $80,000 from the government, located no less than 700 families in their own houses, under conditions most favorable to life and character; and a similar work has been successfully carried on in other towns in France and in England, with consequences that merit high praise.

Paternal governments and their operations are occasionally open to severe strictures; but that experiment at Muhlhausen with the results specified will offset many disadvantages, when in the near future the health-rate and longevity of the workman town comes to be contrasted with the deplorable conditions of life in death which obtain in some parts of free America. In New York City three-fourths of all the sickness and mortality are found among dwellers in tenement houses, some of which are of the worst kind, and worse crowded than any other such houses on earth. Let it always be borne in mind that 11 in 1,000 is the death-rate in the Swansea A division; and that 15.09 in 1,000 is the average of death-rate in Glendale; and we then see so much more clearly the enormous waste of life in the crowded tenement houses in New York, where the mortality reaches the dreadful average of 55 per thousand. There is no other city in

the civilized world in which overcrowding is carried to such excess as in New York. The four most crowded districts in London show an average of 265 persons to the acre, the highest number compatible with health being 100 persons to the acre; but New York shows in its worst tenement house quarter no less than 300 persons to the acre, and there are some parts of Boston but little better. Mortality is severely dependent upon the space allowed to each human being. Given 202 square yards to each person and the mortality is one in 49; reduce the allowance to 101 square yards each and you increase mortality to one in 41; carry the reduction further, and at 32 square yards you reach a mortality of one in 36; which can be progressively increased until the horror of the Black Hole at Calcutta is eclipsed.

Epidemic diseases, such as the plague and the cholera, find fields ready for their operation where people are most crowded, and many of the most destructive diseases are greatly assisted by, if they do not owe their existence to, human exhalations. The incidence of pressure on the several classes may be illustrated by the deaths from cholera in London in 1849, among the higher, the middle and the lower ranks of the population. Among the higher ranks death reaped only 26 per 1,000; in the middle class, 157; and among laborers and their families, 817 per 1,000. Of course, these terrible differences are not entirely due to overcrowding in poor homes; poverty and neglect exaggerate the consequences of deficient ventilation; but the provision of cleanly, well-ventilated homes would directly stimulate better habits into activity, and, in an appreciable degree, diminish want and neglect from other causes. In every country the people will be, in the main, just what their homes make them. Some few have enough initial force to make their homes; but in the mass, the homes make the people; hence it is of the highest importance that all practicable means should be employed to raise the standard of life. Savings banks guaranteed by the government, building and investment societies, under adequate control and supervision, and, in fact, any and all means that point toward provident and self-respecting habits in the community, are bulwarks for the nation.

The importance of home cannot be overestimated. It outranks schools and every other form of educational influence in building character; and we need not look for æsthetic excellence in the midst of physical degradation. Cerebral life predominates in towns, and animal life in the country. It is a significant fact, that nearly all our great writers have been educated in the city. So far as can be ascertained, Shakespeare wrote nothing before he went to London, nor in the five years preceding his death, at the age of 53, after his final return to Stratford on Avon. In cities, men are radical and feverish; in the country, they are calm and conservative; and the blending of the two extremes by uniting home life in the suburbs to urban industries, through the agency of cheap railroad transit, and the operations of building societies, would bring new and better elements, which could not fail to prove beneficial, into our social problem. Homes in the country owned by workmen would largely economize life and health, would add to industrial results and mental activity, and, were it not foreign to our subject, it would be easy to show that

the chasm so often fruitlessly deplored between labor and capital would have no dangerous existence in a community where every man rejoiced in his own roof and his own garden. Such ends are worthy the best efforts of philanthropists and legislators. Society, as defined by the nation, is a body organized for joint defense, not only as against other nations, but against all dangers, including want, disease and death, whether on the battle field or from wastefulness, criminality or vice.

Taking this view of our common obligations, it would be a laudable work to afford the guarantee of society to well-founded schemes for improving homes, which would give better health, greater longevity and higher character to the people, as well as increased possessions available for all national purposes. That would be a war of conquest from which the nation and the world would come forth a gainer. The individual in this country has so much liberty in matters relating to health, that his freedom degenerates into license, to the great danger of the community. A benevolent despot, wise, well-informed and resolute to protect society from suicidal conduct, and worse than suicidal neglect, would legislate against tenement houses in disrepair and overcrowded, and against all haunts of disease, as determinedly as against any form of gross crime. We ought not to be content with less than the country average of life in health in cities. New York State loses only 38 per cent. of its life under five years of age; but New York City twelve more on every hundred. Rhode Island altogether shows an average longevity of over 31 years; but Providence, the most populous city in that State, can only attain an average of 27 years, although it is largely recruited from the country. Providence has the same average longevity with Liverpool, England; but the greater vitality of the English country districts appears in the average longevity of 38 years, which they attain.

The picked men in country districts, abounding in enterprise, gravitate toward city life, and are absorbed therein to an extent which figures cannot adequately describe; but, notwithstanding that circumstance, there are only seventeen men in every hundred, in the four largest cities in England, who live to be forty-five years of age, while in the country generally there are over twenty in every hundred attain that age. Out of 100,000 persons in Liverpool only ninety live to seventy years, but in the rural districts 202 live beyond that age. The eastern districts of London have an average of life of from twenty-five to thirty years; and the rural districts attain from forty to fifty years. General Walker says that the average life in the United States in 1870 was 39¼ years; but New York City and Philadelphia ranged two years below Liverpool, or only twenty-five years, losing more than one-third of the general average duration. The military experiences of Prussia show that only 19.73 per cent. of town-bred men are fit for service, but the country districts supply an average of 26.58. In France, city life attains an average of thirty-five years; in the country, fifty-five years.

Ventilation and cleanliness are important factors of health in all homes, however situated; but the requirements of any system of ventilation that is to be popularly applied must be simple and inexpensive, or it will fail in general utility. In the House of Parliament, in

London, a complete staff of skilled engineers and employees is required to attend to heating and ventilating the building, under the very highest scientific direction; and in the Capitol at Washington, with costly machinery, the worst possible results are attained, for want of skilled management. The simplest contrivance, and the most effective for ventilating purposes on a large scale in this country, may be seen in the churches of Dr. Scudder, in Brooklyn, and of Dr. Hepworth, in New York. Flues lined with iron and supplied with gas jets, to create within them a current of warm air, carry off the foul air from all parts of each building, so rapidly, that the whole supply can be changed within five minutes; and the flues being under control, independently of the heating apparatus, enable those in charge to ventilate the buildings as efficiently in summer as in winter, because the ventilating flues can be worked to their full capacity without heat from the furnaces. This is the point on which the ventilation in many of our large buildings fails; because its efficiency is made to depend upon heat from the furnaces, and when spring opens and little fire is needed for heating purposes, the ventilation decreases with the amount of heat.

All ventilating shafts and flues should be so constructed that they can be efficiently worked every day in the year. Homes for the people need not have costly apparatus; ventilating ducts can be built around the chimney, one for each living room and sleeping room, and these ducts, heated by the fire needed for cooking purposes, would serve all ordinary requirements. Constructed with a small iron door at the bottom of each duct, or with a register on hinges, so that when little heat is furnished, during the spring or summer, an oil lamp could be placed in the base of any duct required to be active. So lately has the necessity of ventilation of dwellings been recognized for the maintenance of health, that experiment has not yet matured plans which meet every demand. The State should offer a premium, sufficiently large to enlist the best talents, for the most perfect plans and specifications for a cottage perfectly drained and with simple and effective means for ventilation in every room. The ablest minds in this country and in Europe are at work solving the problems which the demand for better physical conditions in the homes of the people present, and no more worthy subject than this can be presented for aid to our State governments.—*From Fourth Annual Report of State Board of Health of the State of Wisconsin*, 1879.

———o———

To Drain Lands.—Drink whisky and spend all of your time at a village saloon. This receipt will surely drain you of all your lands in a very short while.

PREVENTABLE DISEASE.

By Edwin R. Maxson, A.M., M.D., LL.D., of Syracuse, N. Y.

As an illustration of the extent to which *preventable causes* are operating to produce disease, I have selected the very common one, *Paralysis*, the Παραλυσις, from Παραλυω, to loosen, dissolve, or weaken.

And, that *all* may the better understand the true bearing of the matter, I will try to give a fair account of the disease as it has fallen under my observation, in this country and abroad; including Apoplectic, Traumatic, Hysteric, Diphtheritic, Syphilitic, Rheumatic, Lead and Tobacco cases.

And, while it may readily be seen that many of the causes operating are clearly *preventable*, it is equally true that most of them are, at least, remotely so. And what is true of paralysis, in this respect, may hold good in relation to disease in general, to a great extent.

Apoplectic Paralysis is the result of apoplexy, and may depend, remotely, upon all the accidents and imprudencies which lead to the apoplectic fit; such as irregular eating, improper food and drinks, licentiousness, violent fits of anger, etc., being attended with softening, or other organic change, of the brain, in many cases, with or without hemorrhage, forming a brain clot; the subsequent attending paralysis being general or local, involving, very generally, one side, or the lower extremities, according to the brain lesion attending the apoplexy. And, in some cases, in which there is no perceptible lesion of the brain or nerve centres, the paralysis may be recovered from, by removing the causes, and pursuing a judicious course of treatment; and the same may be true, to some extent, of cases attended with lesion of the brain, with a brain clot, a fair proportion of them improving under judicious treatment, as I have found. But in no case is it reasonable to expect very marked permanent improvement, under any treatment, without a removal of the causes that may have been operating, directly and indirectly.

Traumatic Paralysis may be the result of injury of the brain or spinal-cord from carelessness or unavoidable accidents; and it may be *general* or *local*, depending upon the *seat* and *extent* of the lesions of the nerve centres involved, cephalic, spinal or ganglionic.

The paralysis may follow immediately on the injury, especially when of the brain. But, when *spinal*, it more generally follows remotely, unless the lesion is very considerable, in which case it may be immediate, as in lesions of the brain. And it not unfrequently happens that the inflammation or diseased action passes rapidly, or slowly, from injury of the spine to the brain, and the reverse.

When the brain is injured, it is usually the opposite side that is paralyzed, or the lower extremities, perhaps, in some cases. And when the lesion is spinal, one or both legs may be paralyzed, according as one or both lateral portions may be involved; if anterior, suspending motion, or posterior, sensation, but more generally both. If high up in the spine, as between the origin of the external and internal respiratory nerves, as between the fourth and fifth cervical,

abdominal respiration may be continued for a time, the thoracic respiratory muscles becoming paralyzed. But an extension of the disease may very generally involve the third and fourth cervical as well as the communicating branch from the fifth, constituting the phrenic or internal respiratory; and paralysis of the diaphragm follows, death being the result, even though no other symptoms may indicate a fatal termination, as I have witnessed. Many cases of traumatic paralysis may, however, be either cured or materially improved.

Hysteric Paralysis occurs with females, and, occasionally, males, especially boys; and is very generally the result of various imprudent habits, in both sexes, including self-abuse, with a too vivid imagination, high living, laziness, novel-reading, and native or acquired wickedness, with their attendant influences. It may be quite general, but is more frequently local, involving an arm or leg, and is apt to be transient, coming and going, though it may be permanent, the power of volition over the paralyzed part becoming perpetual, sometimes involving the organs of speech, as I have witnessed. In small boys it may depend upon an abnormal condition of portions of the genital organs, as the prepuce.

This form of paralysis may very generally be cured with proper treatment, if the patient can be made to break off the imprudent habits which may have been operating to produce it, and will conform to the laws of health and rules of propriety in every respect.

Diphtheritic Paralysis, which is the result of diphtheria, may come on during or subsequent to the disease; and it may be general, involving all the voluntary parts of the system, and, more or less, the vital. Or, sometimes it is local, involving some vital organ, as the heart, or else the eyes, an arm, or leg.

The prevention of this form of paralysis consists, remotely, in avoiding the causes of diphtheria, by proper sanitary regulations, and, directly, by isolating the sick with this disease and using suitable antiseptics, as well as proper nourishment and a sustaining treatment for a reasonable time.

Too much care cannot be taken to prevent exposure, of children especially, to this disease. A boy from a distant town was recently in this city on a visit, and, from mere curiosity, went into a room where a child was dying from diphtheria. He went home, and was soon down with the disease, and barely escaped with his life. A similar circumstance, only worse, was the case of a lady with a young child, from a distant town, persisting against my remonstrance in taking it into the house of her brother, whose children were down with diphtheria, with the result of losing it and her other two children.

Syphilitic Paralysis generally follows that disease quite remotely; and, when it occurs, is preceded, if not attended, with darting pains down the legs; commencing with an awkwardness in walking, passing on, if not arrested, to paralysis of the legs, bladder, rectum, and, finally, becoming cerebral, as well as spinal; delirium, coma and death may result from spinal and cerebral schlerosis, which attends the disease.

The prevention of paralysis from this disease is to avoid the disease, and its causes, of course. And this is of vital importance, on all accounts, but especially from the fact that paralysis, thus arising, though

not always incurable, is very apt to go on to a fatal termination, in spite of the most judicious treatment.

Rheumatic Paralysis may be general, though quite often local, involving only a few muscles, or a group, as of the face. And, while it often occurs in persons of a rheumatic constitution and habit, exposure to cold, while sweating, may produce it, suddenly, as I have noticed. And, in persons of not a rheumatic habit, or even tendency, being in such cases attended with little or no pain in the paralyzed part. And, hence, to avoid paralysis from this cause, is to guard against all the imprudent exposures and habits that are known to produce rheumatic affections, including exposures to cold, filthy personal habits, improper food and drinks, etc., too numerous to mention. It may generally be cured by proper treatment and removal of all the causes, direct and remote.

Lead Paralysis is becoming very common, not only from exposure to lead, by artisans, painters, plumbers, drinking water running through lead pipe, sleeping in newly painted rooms, or occupying them, etc., but also from the use of lead as a medicine, imprudently, locally or internally. But, perhaps, the most frequent cause of paralysis from lead is from its use as a cosmetic, hair-dyes, etc.; for, its action being slow and insidious, it is often beyond the reach of remedies, having produced irreparable changes in the brain, or other vital organ, before the paralysis is noticed. And, in such cases, the paralysis, though perhaps local to a certain extent, always involves the brain; and hence is attended with more or less mental imbecility, ranging from a slight mental weakness to complete idiocy, as I have witnessed, and of the most deplorable character. Its prevention, of course, consists in abandoning the unnecessary use of lead and observing the greatest possible prudence in its use, where something safer cannot be substituted. No circumstances can justify its use as a cosmetic or hair-dye. And, though many of the cases are curable, they are not all within the reach of remedies, however judiciously administered.

Mercurial Paralysis generally involves all the voluntary parts of the system, and, more or less, the vital. Though I have seen cases in which an arm or leg, or some of the vital organs, as the heart or stomach, appeared to be the more special seat of the paralytic condition.

It often occurs with artisans that are exposed to the fumes or fine particles of mercury. But, perhaps, as often from absorption through the skin, when medicinally applied; or through the stomach, when taken for a long time in the form of *blue mass*, without being followed by a laxative, or acting as such.

This form of paralysis is attended with violent neuralgic pains, tremors and twitchings of the muscles, tremblings, etc. And, while it may be *entire*, in the parts affected, as an arm or leg, or when, as is more common, the whole system is involved, it is quite as often only partial in *degree*, more or less power of voluntary motion being retained, as in cases of shaking palsy.

As mercurial paralysis may often be quite incurable, and, when curable, only after a protracted course of treatment, being also attended with intolerable suffering, the greatest possible prudence

should be exercised by those exposed to mercurial influences ; and, in all cases in which a more safe remedy can be substituted as a medicine, for external or internal use, it should be done. And, in cases in which a safer substitute cannot be trusted, the greatest care should be exercised to prevent its unnecessary accumulation in the system.

Tobacco Paralysis may be *general* or *local ;* generally, however, involving the lower limbs, and, in fatal cases, according to my observation, invariably extending to the bladder and rectum, and terminating by a suspension of the renal function ; the heart, and other vital organs generally, also becoming more or less involved ; all of which symptoms had been developed in a case I recently saw in a distant city, terminating fatally, after lingering for six months, with paralysis of the legs, bladder, and, finally, kidneys, as appeared. I have had cases, however, in which there was a general collapse of the nervous system, with partial paralysis of the heart muscles ; one of which I visited in Massachusetts, which recovered, and another from Michigan, attended with convulsions, which terminated fatally, with insanity ; both young men or under middle age.

In those cases in which there is, at first, a general collapse of the nervous system, the heart and brain become poisoned by the accumulation of *nicotin* before the legs become affected so as to be noticed. Such cases, however, generally occur from a protracted accumulation of the poison of tobacco in the system, or else from the use of a large quantity, or of unusual strength, in a given time. The paralysis, in such sudden cases, is of a passive apoplectic character, though, of course, rendered transient by death.

The prevention of paralysis from tobacco consists, of course, in abstaining from its use, in any form, for which there is not one shadow of an excuse.

In conclusion, I respectfully suggest to *medical men* that, while we are trying to cure paralysis and all other forms of disease, and prudently avoiding the causes ourselves, we should use our influence as far as we can, consistently, to induce others to observe a like prudence, in avoiding the causes of disease. And I also respectfully recommend to *all* a careful avoidance of both the direct and remote causes of disease, and especially the more flagrant, unnecessary and ruinous *habits*, which are now thus not only crippling and killing so many, but also tending to the physical degeneracy, intellectual weakness and moral depravity of mankind.

To correctly understand our responsibility in this matter, it is only necessary to remember that all these forms of paralysis, as well as most of the ills that afflict humanity, so often regarded and deplored as "visitations of Divine Providence," arise, either directly or indirectly, from *causes* that might be avoided under proper sanitary regulations and the exercise of a discreet and enlightened common sense. And, hence, if visitations of God, in any sense, are such, only as a natural legitimate result of a violation of the *laws* of life and health, which involve not only our physical, but also our intellectual and moral well-being.

No. 208 *Madison Street, Syracuse, N. Y., August* 3*d*, 1880.

MENU.

The Discrimination of Wholesome Food.—Good meat should possess the following easily-observed characters: 1. It ought to be of a full, slightly brownish, red color; neither of a pale pink tint on the one hand, nor of a deep purple hue on the other. If pink, disease is indicated; and if purple the animal has probably not been slaughtered, but has died with the blood in it, or has suffered from acute fever. 2. It should have a marbled appearance, from the ramifications of little veins of fat among the muscles. 3. It should be firm and elastic to the touch, and should scarcely moisten the fingers. Bad meat is usually wet, sodden and flabby, with the fat looking like jelly or wet parchment. 4. It should have little or no odor, and not disagreeable, for diseased meat has a sickly, cadaverous smell. Any disagreeable odor is most easily detected when the meat is chopped up and drenched with warm water. 5. It should not shrink or waste much in cooking. 6. It should not become very soft and wet on standing for a day or so, but should, on the contrary, dry on the surface. Pork, if unsalted, should present the characters above stated; but the color of the meat, if sound, is of a very pale red tint. When infested by the dangerous parasite, *Trichina Spiralis*, the meat is usually of a dark color. Unfortunately, the animal itself can scarcely be detected by the unaided eye; not so the *cysticercus*, or measles, whose little sac is often as large as a hemp-seed, and can be easily seen. Sausages are liable to partial decomposition, and then become poisonous, from whatever kind of meat they may have been prepared. Good sausage-meat should be firm, not moist, gelatinous and vesicular. It should be free from disagreeable smell and taste, and from acidity. As regards fish, it should, of course, be free from offensive smell, and the flesh not soft or gelatinous. Salmon or trout should not only have the well-known pink-colored flesh, but, when the finger is drawn quickly and firmly across the fish, the depression so caused ought to fill up quickly, and a corresponding elevation or ridge soon appear. Sea-fish is not tested in this way; but the rigidity of the fish is sufficient to indicate its fresh condition. The bright red color of the fish-gills is a sign of very little importance, as the gills are often artificially tinted.—*The Caterer.*

The Adulteration of Olive Oil and the various substitutes for it have increased to such an extent of late years that the French Academy of Sciences, in its last sittings, had under its consideration the best practical means of detecting the nefarious traffic. The celebrated chemist, Dumas, indicated some of the methods that can be employed. The chemical tests are numerous enough, but cooks, as a rule, are wanting in the necessary knowledge to enable them to apply them. A very simple method is to watch the variety of shapes taken by different oils on the surface of water poured into a saucer. If the oil is

genuine olive oil, the drop will take an irregular shape, like an islet well indented and marked with bays and promontories. If it is the product of the black garden poppy, the form will be at first round, but quickly festooning into elegant half circles round the edge. The same result will ensue with rape oil, but the formations round the edge will be more pronounced. Arachis oil gives a circular drop, accompanied by a great quantity of fine little globules, as does oil of sesamé, in which the globules are, however, still more minute. Colza oil makes a precise and well-defined circle. If there are one or more spurious oils mixed up with the true olive juice, the forms of the drops will resemble, more or less, the types above indicated, according to the greater or lesser proportion of the various adulterating substances. Oil which, when shaken in the bottle, assumes a permanent chaplet of air bubbles, is not pure olive oil, for, in the latter, air bubbles are only transitory. It may, therefore, be set down as a mixture in which rape oil predominates. Finally, there is an adulterant extracted from cotton seed, now largely employed by dishonest manufacturers, and which is about to engage the special attention of the Academy. This oil can be rendered colorless, and, as it possesses neither taste nor smell, affords great facility in falsifying olive oil. But it is of very little use for the Academy of Sciences or any other learned institution to expose these tricks of trade unless the laws are enforced against the adulterators.—*Jour. of Applied Science.*

Mustard with Potatoes.—Michael and Patrick, soon after landing in America, entered an eating saloon, when, being comfortably seated at a table on which stood the accustomed castor containing pepper-sauce, vinegar, mustard, etc., they called for fried potatoes. While enjoying their frugal meal together, Michael espied the mustard bottle, and, having never before seen or tasted this kind of sauce, was tempted to swallow a good-sized spoonful with a very little potato. Very soon the tears commenced to flow down his cheeks in large quantities, which, being noticed by Patrick, led him to inquire, "What are you crying about, Mike?" to which Michael replied, "I am crying to think of my poor father, who died a year ago to-day." Patrick, seeing Michael eating the yellow paste with such apparent relish, notwithstanding his grief, was induced to take a spoonful himself, and, like Michael, he commenced to cry, when Michael asked, "And what are you crying about, Pat?" Patrick replied, "I am crying because I am so sorry you did not die when your father did."

Potato Salad.—Any one who has eaten potato salad at a Parisian hotel will not be very likely to despise it afterwards. The following is a good formula for the simple but delicious preparation: Cut ten or twelve cold boiled potatoes into slices from a ¼ in. to ½ in. thick; put into a salad bowl with four tablespoonfuls of tarragon or plain vinegar, six tablespoonfuls of best salad oil, one teaspoonful of minced parsley, and pepper and salt to taste; stir well, that all be thoroughly mixed. It should be made two or three hours before needed on the table. Anchovies, olives, or any pickles may be added to this salad, as also bits of cold beef, chicken or turkey, if desired; but it is excellent without these.—*The Caterer.*

Editor's Table.

Tuberculosis as an Infectious Disease.—New facts are observed, from time to time, which extend the inquiry in regard to the nature of infectious diseases. THE SANITARIAN for August, 1877 (Vol. V.), contains an "Abstract of a paper, read by the editor before the Section on State Medicine and Public Hygiene, of the American Medical Association, held in Chicago, June 6th, 1877, on '*Tuberculosis in Milch Cows and the Contagiousness of Tuberculosis by the Digestive Organs.*'" Since the publication of that paper, the inquiry has been prosecuted with great diligence by the most eminent scientists in France, England and Germany. Among these are Vallin, editor of the *Revue d'Hygiène et de Police Sanitaire*, and Professor of Hygiene in the School of Val-de-Grâce, Peuch and Toussaint, Professors in the Veterinary School of Toulouse, and the distinguished Prof. Chauveau. In 1876, the Minister of Agriculture, in Prussia, appointed a Commission, of which Virchow is the head, to inquire into the danger that may arise from using the milk of cows affected with tuberculosis. In the *Berliner Med. Wochenschrift*, he has given a summary of the facts and conclusions arrived at, although the full report of the Commission has not yet been published. In England Dr. Creighton has published, in the *Lancet*, a series of letters "On an Infectious Variety of Tuberculosis in Man Identical with that in Cattle." Quite recently, too, Dr. Paine, of Cardiff, has called attention to a disease of the throat which he claims to have traced to the use of milk from cows affected with certain diseases of the feet or of the mouth. It is not diphtheria, for in no case has the false membrane, peculiar to that disease, been observed. It consists of a vesicular eruption seated on the uvula, the tonsils and over the whole surface of the pharynx. It is not, by any means, so fatal as diphtheria. It was found in all these cases that when the milk from the diseased animals was discontinued, the disease disappeared. In the diseased animals the quantity of milk was very much diminished, and the relative proportion of solid elements was very much lessened. Chemical tests are not satisfactory; the microscope is the most reliable.

The same observer also found that, when diarrhœal diseases became epidemic in children, the milk, when carefully examined, was found to contain globules of pus and blood; in these cases, too, the udder of the cow, when examined, was found to be affected. As a further proof, he states that among the Irish residents of the district, who number about 10,000, there were only four deaths from this dis-

ease during the year, and this he attributes to the fact that they did not give their children milk. This is the more significant in confirmation of the suggestion thrown out by the article in THE SANITARIAN: "That the milk of cows affected with tuberculosis is likely to induce that disease, *usually commencing as intestinal catarrh*, is not only rendered probable by the experiments cited, showing that it has this effect when fed to domestic animals, but this evidence receives additional strength from the *prevalence* of *fatal intestinal catarrh, common to infants fed on cows' milk, in most American cities.*"

In the said article (p. 341) Gerlach is quoted as saying "That tuberculous matter is, in a high degree, infectious," and, according to his experiments, it was capable of causing the disease, even after it had been boiled for half an hour or more. Such, too, has been the result of the experiments of Peuch and Toussaint. "From a cow, arrived at a confirmed stage of phthisis (pommelière), they took some muscular tissue, apparently exempt from tubercles, but not, perhaps, from interstitial tuberculous ganglions; with a press the juice was expressed from this, and a small quantity of the fluid injected into the cellular tissue of a small pig; at the end of 67 days the animal, very much reduced in flesh, was killed. Its organs and the tissues were infected with tubercles.

Two other pigs, and several rabbits, were fed on the milk from a cow in the last stage of phthisis. These animals wasted very rapidly, and presented, at the autopsy, in all the organs, an abundance of tubercles in every stage of development. Other pigs, in the same condition, but not fed on the milk, remained in perfect health."

* * (*Danger du Lait des Vaches Phthisiques. Par* M. LE DR. E. VALLIN. *Revue d'Hygiène et de Police Sanitaire. Tome II., Julliet*, 1880).

Dr. Vallin continues, in the same article: "Is not this conclusion frightful, when we consider the great frequency of phthisis in man —one death from phthisis for every three deaths, under 30 years— and the frequency of abdominal diseases and especially of abdominal phthisis in children who are fed on cows' milk?"

Here is, then, the strongest reason that can be advanced for a rigid and conscientious inspection of all the meat killed in every slaughter-house in the country. Some system by which the cattle in the dairies, throughout the State, can be inspected at intervals, so as, if possible, to prevent the sale of the milk of diseased cows, should be adopted by State boards of health. They cannot, certainly, direct their attention to a more worthy object, and if they are in earnest in the work they have undertaken, it is an object they cannot ignore, it is a duty they cannot conscientiously evade.

T. P. C.

Dr. Ralph L. Parsons, formerly Superintendent of New York City Asylum on Blackwell's Island, and subsequently of King's County Asylum at Flatbush, we are glad to be informed, has opened a private asylum for the care and treatment of mental and nervous diseases, at GREENMOUNT, on the Hudson, (P. O. Box 234, Sing Sing, N. Y.) Few physicians about New York are better known for the successful care and treatment of such cases than Dr. Parsons. The private retreat he has chosen is delightfully and eligibly situated; well drained, spacious, beautifully shaded and handsomely laid out—affording an elegant and luxurious home—with an abundance of pure water and pure air, and free from all malarial influences.

New Orleans' Responsibility for Obstructing Commerce.—Just after going to press with our last number, we received a letter from Dr. Jno. B. Thornton and Hon. John Johnson, of Memphis, members of Tennessee State Board of Health, inclosing a copy of an "open letter" to the Governor of Louisiana, giving the reasons why Tennessee, through its State Board of Health, July 14th, issued certain quarantine regulations against New Orleans, and claiming that Louisiana, and especially New Orleans, would consult her interest best by conforming to the inspection service necessary at southern ports with reference to vessels arriving from yellow fever infected ports of South and Central America and the West India Islands, and especially with the yellow fever on board: the *Excelsior*, a vessel which had been permitted to pass quarantine without sufficient cleansing, and arrive at New Orleans, having had yellow fever develop on board a few days thereafter. A printed copy of the "official notice" of the Tennessee State Board of Health referred to was also inclosed, and our opinion of the same requested, together with our views on the value of the inspection system as an agency for obtaining and imparting information to threatened communities, by which they might be enabled to take timely and intelligent action, with the least possible interruption to commerce and travel. Having before us the letters of Dr. Hargis, of Pensacola, and of our New Orleans correspondent (published in last number), as well as the communications just above mentioned, we replied by letter as follows:

NEW YORK, August 19, 1880.

DR. G. B. THORNTON AND HON. JOHN JOHNSON, MEMPHIS, TENNESSEE.

Gentlemen: Your "open letter" and note of the 14th inst., just received as the last form of THE SANITARIAN for September has gone to press, or I would have made an "open" acknowledgment, in addition to an editorial on the same subject. But briefly now, considering all the circumstances, as far as I have been able to ascertain them, and some in addition to those stated in the "official notice

from the Tennessee State Board of Health, July 14th," ... I am clearly of the opinion that while there was sufficient reason for the health authorities to suspect the *Excelsior* on arrival, she was not treated accordingly—was not treated in accordance with their recently published quarantine regulations; was not, in short, disinfected, and was in a dangerous condition when admitted to pratique. In the second place, still further danger was incurred after the inefficiency of the quarantine treatment had been clearly proven by the occurrence of yellow fever among her crew. Storing her cargo in New Orleans at that time, or even to keep in store so much as had already been transferred without immediate measures for purification, was no less inconsistent with their own recently adopted regulations than the common knowledge on which such regulations are based, and to have such merchandise in store under implied subjection to shipment on opportunity, was, in my judgment, ample justification of the action taken by the Tennessee State Board of Health, and other authorities in the Mississippi Valley, to protect themselves against such a dangerous proceeding. "In the matter of excluding vessels from infected ports during the dangerous season," and "the value of the inspection system as an agency for obtaining and imparting information to threatened communities," my opinion is, that infected vessels, or those in a filthy condition, and, therefore, constantly subject to infection, should be excluded, till cleansed, at all seasons, and that the chief value of the inspection service is to secure cleanliness of vessels and merchandise; and had this function been properly exercised in regard to the *Excelsior*, all the injury inflicted on commerce which has grown out of the neglect, would have been avoided. The history of the vessel, as given me by a correspondent (whose letter is now in process of publication in September number of THE SANITARIAN) was clearly ascertainable, and fully sufficient, as appreciated by the quarantine officers of New Orleans, to justify measures of purification; but, as appears, in default of means, a mere pretense was gone through with, and accepted by the higher authorities at New Orleans. All such acts and services are practical deceptions, which lay whole communities under danger of calamities; and I know of no action for safety—call it quarantine or what you may—too severe against the perpetrators of such deceptions. The best protection against them, as against filthy vessels, is a well-skilled inspection service, wholly independent of all local interests, such as that which, I believe, it is the purpose of the National Board of Health to organize and maintain.

Truly yours A. N. BELL.

Since the foregoing we have received the following letter, which is of interest not only in regard to the continued defiance of the New Orleans health authorities to accepted knowledge on necessary precautions in order to protect her own community, and other communities in commercial relations with her, from the dangers of an infected vessel, but as a contribution to the history of the *Excelsior* and her crew while in an infected port—accounting for her infection:

NEW ORLEANS, *September 7th*, 1880.

EDITOR OF THE SANITARIAN:

Since last letter the following additional notes on the *Excelsior* have been obtained, some of which are contradictory to those furnished in last letter:

While in Rio, the second mate and three men went as far as the wharf to receive and watch coffee for the lighters, and one night the three seamen missed the boat, and slept on one of the lighters. Kenny, Case 1, was not one of the three, but Jonas Myberg, Case 2 of the *Excelsior*, the only one who recovered, was.

Five or six times during the passage of the *Excelsior* from Rio to Louisiana Quarantine Station, the seamen went between decks to ascertain whether any leaks from deck reached the coffee; no such visit took place for more than a week before reaching the Mississippi River Quarantine Station, and during none of the visits did the men remain between decks any longer than was actually necessary to examine for such possible leaks.

No ballast was ever removed from vessel from the day she left Rio to this city. 10 to 15 tons of extra ballast, from New Orleans, were placed on her before she returned to quarantine, and she still contains that ballast, which was only partially disturbed at Quarantine Station. During her sojourn there, pot fumigation *alone* was used, and the so-called "*Jones'* Improved Perry Apparatus" (which the people of this city and others are made to believe a success) was *never used on her*. The *Excelsior* left Quarantine Station on August 16th, 1880, at 11.30 P. M., and landed at Tunisburg, a point a little over a mile below the Louisiana and Texas R. R depot, in Algiers, and is still there—an *eye-sore and a possible source of danger*.

If the *Excelsior* is *clean* and disinfected, why not allow her to go to her wharf, get her cargo and leave for Europe?

If the Board of Health have no faith in the work of their quarantine officers, why make of Tunisburg, a part of New Orleans, a sub-quarantine station for yellow fever infected vessels? * * *

Construction and Management of Privies: Report of Committee, New Orleans Auxiliary Sanitary Association. If this report was to some board of supervisors of a village of a thousand or so inhabitants in the interior of Louisiana, we should be disposed to speak well of it, and to commend it for its practical utility and improvement upon the practice of villages in general, which are under the necessity of using privies. But seeing that it is to the best working sanitary organizations in the United States, intended for the perpetuation of a vile system of storing filth in the midst of a great city of over 200,000 inhabitants, of unlimited social and commercial relations, characterized by an unsurpassed degree of refinement, and who appreciate the great need and importance of drainage and sewerage, but still persist in such filthy devices—having seen and knowing all this—we are unable to command words sufficiently expressive of our

condemnation of all such trifling with the health of a great community. New Orleans really appears to be not only waiting for another great epidemic, but showing indications of inviting it.

The De Lesseps Canal in its Relation to Hygiene, the title of a paper before us by G. Halsted Boyland, M.A., M.D., etc. (reprint from the *Independent Practitioner*, Baltimore), will scarcely fail to attract the deserved attention of all sanitarians who would watch the results of drainage on a grand scale, through one of the most malarious regions in the world. Dr. Boyland, being in close relation with the eminent author of this great enterprise, has made excellent use of his opportunity to place the sanitary relations of the subject before the public under the light of the best literature, and, in anticipation, in comparison with the results of similar works, although on a much less gigantic scale in other places. He shows a clear appreciation of the physical conditions to be contended with, and although somewhat enthusiastic in his advocacy of this particular place and plan, and admiration for its author, his attention is not by any means diverted from the particular branch of the subject which he has taken up, or in the least disposed to underrate its difficulties and dangers. On the contrary, he presents them as they are, and with all their disadvantages still thinks them less than any change of place would involve, and would, therefore, measure his efforts to surmount them by the same scale.

It affords us especial satisfaction to be made the medium of a second paper from Dr. Boyland, in continuation of the subject, printed on other pages of this number, showing the lively appreciation of M. De Lesseps and his associates in the enterprise, of timely and adequate measures for the protection of the health of the operatives in the work.

Rhode Island.—Second Annual Report of the State Board of Health, for the year ending Dec. 31, 1879, including the twenty-sixth Registration Report for 1878, pp. 314. The volume opens with a concise introduction to the work of the Board addressed to the General Assembly, signed by all the members. This is followed by a brief special report by the Secretary, summarizing the proceedings of the several meetings, abstracts of the laws bearing upon the special duties of the Board in regard to the general interests of life and health, investigations into the causes of epidemics, social conditions, reports on vital statistics, measures necessary to accuracy, etc., and forms of blanks issued, in order to secure uniformity in the returns. Next follows the Registration Report (1878), which take up about one-third of the volume, including elaborate tables of births, marriages and

deaths, divorces, summaries and synopses of correspondence and cattle commission.

Population of the State (1875), 258,239; American, 134,722, or 52.17 per cent.; foreign, 123,517, or 47.83 per cent. *Births*, 6,714: of American parents, 2,877, 43 per cent.; foreign, wholly, or one of the parents, 3,827, 57 per cent. *Marriages*, 2,324, 1 in 55.67. *Divorces*, 156—to marriages, 1 in 10.9. *Deaths*, 4,441—1 in 58.06, or 17.20 per 1,000. The largest proportional number of births to population is from East Providence (population, 4,336)—1 in 26.12; the smallest from Little Compton (population, 1,156)—1 in 128.44. Marriages, in Foster (population, 1,543)—1 in 18.37; New Shoreham (population, 1,147)—1 in 573.50. Deaths, in Warren (population, 4,005)—1 in 47.12—22.20 per 1,000; New Shoreham (population, 1,147)—1 in 127.44, or 7.8 per 1,000. Towns reporting less than one per cent. of population: New Shoreham, 0.78; Jamestown, 0.82; Tiverton, 0.85; Westerly, 0.88 and Johnston, 0.92. In Providence (population, 100,675)—1 in 50.63, or 19.89 per 1,000; rest of State, 15.56; whole State, 17.20.

As classified, the percentage of deaths are attributed, respectively, to zymotic diseases, 28.88; general or not localized, 10.23; nervous, 13.09; respiratory system, 26.42; circulatory system, 4.07; digestive system, 4.42; urinary system, 2.17; generative system, .64; locomotive system, .62; integumentive system, .17; old age, 5.25; external causes, 4.04.

Principal causes of death given, consumption, 676; diphtheria, 435; pneumonia and congestion of the lungs, 317; old age, 222; cholera infantum, 168; heart diseases, 166; fevers, typhoid, etc., 150; accidents, 122; cancer, 119; convulsions, 112; apoplexy and paralysis, 102; croup, 93; scarlatina, 86—15 more deaths from consumption in 1878 than 1877, and 21 more in 1877 than 1876. Previous to 1875, the number from consumption had never reached 600. It is the only disease which has invariably held the same place in the order of greatest number in a series of years. In and since 1877, diphtheria has held the second place. Typhoid and other fevers killed 16 more in 1878 than in 1877, and 24 more in 1877 than in 1876.

For 1879, tabulated summaries are given of the diseases prevailing, together with meteorological observations in the several towns, monthly, with the object of ascertaining not only what, if any, relations existed among certain diseases with one another, but with the attendant meteorological conditions.

"The continued prevalence of glanders and farcy (which are two terms for one disease)," was taken advantage of last year, by the Secretary, for the exercise of his functions under the law, in the in-

stitution of such inquiries into the nature of this disease, and such restrictions in regard to it, as seem to have well-nigh stamped it out.

The special papers of the report, are: *Artificial Feeding of Infants*, by Oliver C. Wiggin, M.D.; *Ventilation of School-houses*, by William A. Mowry, A.M.; *Sewerage of the Dwelling*, by Orville Fisher, Civil and Sanitary Engineer; *Disposal of Excreta*, by Robert F. Noyes, M.D., and *Color-Blindness*, by Wm. Shaw Bowen, M.D. The first one of these papers is noteworthy, as the essay which gained for the author the award of the Fisk Fund Prize at the annual meeting of the Rhode Island Medical Society, 1879, for its superior merit. It covers the conditions of both mother and infant, which call for artificial feeding; treats clearly of the special physiology of the infant as regards its nutrition and powers of digestion, and the properties of infantile food, taking, of course, human milk as the standard of excellence. In this relation, the insufficiency of cows' milk, as ordinarily prepared, and the means by which it can, and ought to be made to more nearly resemble human milk, is pointed out with special stress on the importance of the mineral constituents, and the necessity of adding them in order to preserve a healthy infantile digestion; not without caution, however, lest they be added in excess. Goats' milk is, on the whole, considered preferable to cows' milk for infants, as containing a larger proportion of mineral matters, and more nearly resembling human milk.

The relative value of the common farinaceous foods, the intervals of time for feeding, when to change the diet, and the absolute necessity of cleanliness under all circumstances, are all well considered.

Mr. Mowry's paper is wholly from a teacher's standpoint. He dwells with special emphasis on the importance of a plenary supply of fresh air, as if that were not, after all, the most easily accomplished part of ventilation under all circumstances. If efficient means of getting rid of the foul air of school-houses be provided, the pure air will generally find means of entry, even in spite of numerous abominable contrivances to keep it out. And especially will this be the case, if 25 square feet of floor space, and a height of ceiling sufficient to give 300 cubic feet of air to each pupil be provided, as the space which he recommends. With such space, foul air exits properly placed, or even well-arranged window ventilation—with windows sufficiently near the ceiling—and heat enough, the supply can be kept up with great facility. Of means of warming, Mr. Mowry prefers well-set furnaces with a plenary fresh air-box, to steam heat as commonly provided—and we quite agree with him; especially if the steam heat be *indirect*, the way he prefers it. On the contrary, if used at all, the radiators should be *direct*, so that the walls and floors may be

warmed, and this is the chief advantage of steam heat over furnaces. But in both, moisture from *clean* water, should be provided; this, moisture, the author of the paper seems to underrate the value of. The want of it, in the hot air of school-rooms, is a prolific source of ophthalmia, catarrh and sore throats.

Mr. Mowry advocates the placing of the foul air viaducts "on the opposite side of the room from the hot-air pipes"—from which we infer he accepts the common error of placing furnace registers and radiators in or near the side walls, by which much heat is wasted by sticking close to the surface where it enters, instead of being distributed, as it will be, if the registers or radiators, as the case may be, are properly placed in different parts of the room, and none within four feet of the side walls. Moreover, the air supply from the outside should always be by means of a shaft, not less than fifteen feet from the ground, and not, as commonly, near the surface, where it is filled with dirt. Thus supplied, and with exit openings on all sides of the room through or near the cornice, by means of shafts or otherwise, for the foul air to escape *in the direction of the wind*—the others being closed—an active circulation of the air will be kept up, the temperature easily maintained and equally distributed.

Mr. Fisher's paper on House Sewerage is a rehearsal of common nuisances and common remedies, which cannot be too often repeated. Dr. Noyes' paper on the Proper Disposition of Excreta is somewhat of the same character. He says a good deal more about trap ventilation through chimneys than seems necessary on a settled question—that it should never be permitted. The general sewerage systems are well sketched. Of the new sewerage of Providence: "There are 42.96 miles in this city, and 2,272 connections. . . Not more than 18,000 people are at present benefited, although double that number could be by connecting their estates. . . The bottom of the opening of the sewer, at tide-water, is placed one foot above mean low water mark. Twice, then, during twenty-four hours, may sewage find a free exit, but, during the flooding of the tide, this exit is impeded and tide-water flows at distances ranging from 275 feet in the Brook Street sewer to 4,024 feet in the sewer of Dorrance Street," well calculated, certainly, to flood the houses with sewer gas, notwithstanding the "perforated covers" (commonly stopped up with street dirt) "in most of the sewers at a distance of one hundred feet" apart. By city ordinance no house drain can be laid except by a licensed drain-layer—license being required from the Board of Water Commissioners. Notwithstanding, there appears to be much defective work—many drains and traps which admit of free passage to sewer gas into dwelling houses, and a large ratio of filth diseases.

The statement that less than one-fifth of the population of Providence have connection with the sewers, means that more than four-fifths continue to use privies and cess-pools. "The cess-pools should be ventilated. This is almost never done. Indeed, when it is, a wooden pipe is frequently conducted from the cess-pool outside the house as far as the windows of the second story. . . . Tenement houses in various portions of the city are very often unprovided with any trap whatever, and the gases from the cess-pool find free circulation in all parts of these dwellings."

Dr. Shaw's paper on Color-Blindness is in full accord with the now commonly accepted judgment, that color-blindness is an affection sufficiently prevalent to be dangerous in railway and water travel, unless precautions are taken to exclude all persons thus affected as lookouts.

The reports from towns and special correspondents throughout the State, exhibit a lively interest in their work, and the efforts of the Board.

As a whole, the report is one of extraordinary value. The amount and excellence of the work of the Secretary, especially, in the registration of vital statistics, constitutes an inexhaustible mine of historical wealth in regard to the sanitary and social condition of the population, which will increase in value with the lapse of time.

Washington* continues to groan under an extraordinary amount of unabated and recurrent nuisances, connected with or dependent upon defective drainage. Of the total aggregate of 18,775 nuisances requiring the attention of the health officer in 1879, 725 were of this character, and for the most part in the outskirts of the city, beyond the sewered district, and therefore impracticable of abatement. The difficulties and dangers arising from this cause are chiefly due to the unfortunate site of the city in relation to the mud flats and marshy banks of the Potomac, dangers likely to magnify with increasing population, unless engineering skill superior to any which has hitherto been exercised in this regard is speedily brought into requisition for their effectual abatement.

The privy vault nuisance, a nearly allied subject to defective drainage, indeed, the most odious part of it, also still exists to a disgraceful degree: 10,716 privy vaults; over 500 filthy lots, three-fourths of them holding stagnant water; 50 hog-pens, and 14 slaughter-houses, scattered here and there throughout the city, have been the leading objects of attention.

* Report of the Health Officer of the District of Columbia, for the year ending June 30, 1879.

The public buildings are in keeping with the surrounding conditions. On the evidence of the report before us, they are without exception magnificent examples of unsanitary architecture; and which, taken in connection with the general prevalence of unsanitary conditions throughout the city, are abundantly suggestive of the prevailing high mortality from preventable diseases.

The statistical tables and charts of the report are elaborate and instructive. Total number of deaths annually, for four years ending June 30, 1876–1879: 4,160, 4,208, 4,231 and 4,309. Estimating the population for 1879 at 170,000, the ratio of deaths per 1,000 was 25.35. Of the different races, white and colored, the number of the former being 140,000, and of the latter 56,000, the ratios were respectively 19.25 and 37.90.

Infant mortality, under five years, 2,020. Annual death-rate per 1,000 for the white, 53.68; colored, 127.72.

Between the ages 5 and 20, white (40,046), the annual death-rate per 1,000, 5.97; colored (20,951), 8.64.

Between 20 and 40, white (34,716), death-rate, 10.92; colored (16,-312), death-rate, 20.35.

Of the total number of deaths from all causes—4,309—993, or 23.04 per cent., are attributed to zymotic diseases; 1,109, or 25.74 per cent., to constitutional diseases; and of these, 935 are classed as tubercular; 716, or 166 out of every 1,000 deaths from all causes (16.62 per cent.), were from consumption. At least half of all the deaths from zymotic and tubercular diseases, which ought to be classed together, as being equally due to preventable causes, and fully half of all the deaths under five years of age, aggregating 3,948 of the total number, may be regarded as *criminal* mortality. In round numbers not less than 2,000 lives, annually, are sacrificed in Washington in default of efficient sanitation.

Births reported, total (excepting 395 still-births), 3,816; white, 2,117; colored, 1,699. Rates respectively: 18.57, 30.16. These reports are regarded as being "in no wise complete, and especially is this true of the births of white children." Marriages reported, 712—also incomplete, and profitless for deductions.

The report is altogether a worthy one, deserving a large circulation, particularly in the District, among the law-makers.

Cincinnati.—Annual Report of the Health Department, 1879, Thomas C. Minor, M.D., Health Officer, opens with a response to the National Board of Health circular relative to the sanitary condition of American towns and cities, giving an interesting historical sketch of the city from the time of its first settlement, covering its population and growth, topography, climate, water supply, drainage and

sewerage, streets and public grounds, habitations, civic institutions, sanitary laws and ordinances, vital statistics, administration, etc., etc., in detail, rendering it probably one of the most valuable city documents of Cincinnati ever published. This is followed by the special report of 1879, with an estimated population of 280,000. Total mortality, 5,290; ratio per 1,000, 18.88; under 5 years of age, 2,442. Of the total number of deaths, 1,539 were caused by zymotic diseases, of which 546 were from scarlet fever, 152 diphtheria, 89 typhoid fever. There were six cases of yellow fever—refugees from Memphis—one death; these were all treated in the hospitals. Consumption killed 698. "The death-rate from consumption in Cincinnati," the Health Officer remarks, "is much less than in most of the large cities of the country." But there are besides recorded 121 deaths from bronchitis and 4 from hemorrhage of lungs; these added, the ratio of deaths from consumption to the total from all causes, is 1 in 6.4. From pneumonia, including typhoid and pleuro-pneumonia, 357.

Under the head of Markets, some very useful remarks are made on Cincinnati's exemption from diarrhœal diseases of infants, as compared with other cities, this city being in the midst of a region of garden produce, and with markets commonly free from stale produce.

Swill milk, however, is a bane, and to the use of it the chief mortality among infants in Cincinnati is attributed. On an investigation in 1878 of 126 deaths among infants, "as regards the children fed on cow's milk, it was clearly demonstrated that in all but two instances such milk was derived from slop dairies." Births registered, 7,832—27.97 per 1,000—believed to be "about complete." Still-births, 359—about one in every 22. Premature births, 94. Marriages reported (returns incomplete), 1,434.

Richmond, Va., Annual Report of Board of Health, 1879, on an estimated population of 80,000—white, 46,000; colored, 34,000. *Births* reported (exclusive of 171 still-births), 1,912. *Marriages*, 582—white, 294; colored, 288. *Deaths*, 1,608—white, 732; colored, 876. Under five years old, 716. Chief causes of death: zymotic diseases, 343—of which there were, from scarlatina, 98; typhoid fever, 33; diphtheria, 19; from diarrhœal diseases, 151. Tubercular diseases, 272; of these, from consumption, 236. From other diseases of the respiratory system, 156.

The report particularly emphasizes the large ratio of mortality from filth diseases, and fixes the responsibility on the city government, for withholding the necessary appropriation for maintaining cleanliness. An extension of the sewerage system is urged as among the most essential measures for the protection of health in a growing

population, together with such modification in the construction of sewers, as will render them more efficient in their purpose. The want of ventilation in dwelling-houses, dark and filthy alleys, cattle in the city, and city dairies and bad pavements—all go to show recklessness of public health on the part of the city government, decidedly reprehensible, and for which the citizens should rise in their might and demand reform. The importance of a quarantine station at Hampton Roads, as advised by the National Board of Health, is endorsed and urged as of great importance, not to Richmond only, but to all the cities on the Chesapeake Bay and its tributary rivers.

Reading, Pa., Board of Health Report for 1879, with an estimated population of 40,109, reports:

Births, 1,250; *Marriages*, 581; *Deaths*, 760—354 under five years of age. Of the total number of deaths, there were, from zymotic diseases, 193—of these, from diphtheria, 84; cholera infantum, 35; croup, 32; scarlet fever, 9. From consumption, 109; pneumonia, 31.

Stagnant pond water, gutter filth, unremoved street garbage, and numerous full and overflowing privy vaults, abundantly account for the large ratio of deaths under five years of age, and from filth diseases.

Hard Soaps.—The short notice of the "Adulteration of Soaps" in our last number, has had the effect of raising many inquiries about the hardness of soap, as the commonly accepted, but exceedingly erroneous, evidence of its good quality. As previously referred to, soaps are divided into two leading kinds, technically known as HARD and SOFT, but it does not follow of the former by any means, the harder the better. On the contrary, a good hard soap possesses the qualities which we have before described as pertaining to the German Laundry, made of pure tallow and soda, with a sufficient quantity of saponified resin to render it soft and emollient, but possessing none of the characters of soft soap, made of potash instead of soda salts. But bad hard soap, such as the specimen of old Castile cited in our last number, and such as much toilet soap in the market, is a deception, commonly made of vegetable oils, which have a far greater affinity for water than tallow or other animal oils, and which, when crunched with an excess of alkali—and the more water and alkali the harder they become—insomuch that they are almost susceptible of a polish. Such soaps are uniformly bad—bad in all respects—insoluble in water, harsh and irritating to the hands, and lacking detergent qualities.

Annual Meeting of American Public Health Association.

THE EXECUTIVE COMMITTEE have announced the time of meeting of the eighth annual meeting in New Orleans, December 7–10, 1880.

Papers will be presented on abattoirs, epidemics, life insurance in its relation to the public health, the storm-water question in city sewerage, the sanitary engineering problems of the Mississippi River, the hygiene of emigrant ships, the prevention of venereal diseases, voluntary sanitary associations, etc.

The special questions suggested for discussion at this meeting, in addition to those connected with the papers above referred to, relate to methods of preventing the spread within a town or city—after they have once been introduced—of such contagious or spreading diseases as diphtheria, scarlet fever, yellow fever, measles, small-pox, etc., and are as follows:

What are the best means of securing prompt and reliable information as to the presence and location of cases of such diseases?

What are the best means of securing isolation of the first or of single cases of such diseases, and what are the chief difficulties in securing such isolation?

Under what circumstances is it proper to declare such diseases epidemic in a place?

Under what circumstances is it proper to recommend the closing of schools on account of the prevalence of such diseases?

What precautions should be taken at the termination of each case as to the care and disposal of the dead, the disinfection and cleaning of the room and house, and the period of time at which it is safe to allow the convalescent to return to school or society?

Brief, practical papers upon any or all of these points are earnestly requested, and it is hoped that those attending the meeting will come prepared to give the results of their experiences upon these questions, and to make positive recommendations.

Gentlemen who propose to present papers at this meeting are requested to notify the President or Secretary of their intentions and of the title of their papers, in order that they may be assigned a proper place in the programme. By order of the Executive Committee.

(Signed) JOHN S. BILLINGS, M.D., President,
E. H. JANES, M.D., Secretary.

Names and addresses of the officers of the American Public Health Association:

President—John S. Billings, M.D., Surgeon U. S. A., Washington, D. C.; Vice-President—R. C. Kedzie, M.D., Lansing, Mich.; Secretary—Edward H. Janes, M.D., New York; Treasurer—J. Berrien Lindsley, M.D., Nashville, Tenn.

C. B. White, M.D., New Orleans, La.; E. M. Hunt, M.D., Metuchen, N. J.; J. D. Plunkett, M.D., Nashville, Tenn.; C. F. Folsom, M.D., Boston, Mass.; J. G. Thomas, M.D.; Savannah, Ga.; A. L. Gihon, M. D., Medical Director U. S. N., Washington, D. C.

Literature.

Bible Hygiene, by "A Physician," is a handsomely gotten-up little book of two hundred and fifty pages, with the three-fold purpose of imparting, in a popular, easily understood and condensed form, the elements of hygiene; showing the numerous, varied and important health-hints contained in that most ancient of all authorities; and to prove that the secondary trendings of modern philosophy run in parallel direction with the primary light of the Bible. In substantiation of these propositions the author quotes many texts of Scripture, showing the estimation in which the preservation of health was held under the Bible régime, and the perfect consistency of the Biblical precepts in this regard with the best teachings of modern sanitation. But, in discussing the Divine origin of disease, the author falls into the common error of regarding it as solely in consequence of sin—a punishment for disobedience—and is therefore driven to the inexplicable conclusion that after man sinned the Creator changed his material nature, made him over, as it were, and his body perishable; whereas, before, his body was unchangeable and immortal, as the soul. In consequence of the disobedience of our first parents, our author would have it appear that mankind "became not only subject to pain, sickness and final dissolution, but also prone to certain well known and too often seductive agencies that are apt to interfere with health and curtail life." Not so. Disease forms no exception to the Divine arrangement of natural phenomena; and it would be as easy to imagine that the whole course of nature underwent a change in consequence of man's fall, as that his physical nature was changed in consequence of it. The vital and the physical laws of the universe are alike unchangeable. Human health and disease are subject to those laws, and nowhere in the Bible does disease —taken in a strictly logical sense—appear as a punishment, but as a correction in mercy; and even so when brought about by our own misconduct, because we are admonished by it to be ready for death; corrected against the imprudence committed for future improvement in ourselves, not punished that others may profit by our example, which is the true design of punishment. There is, indeed, as a general thing, in the Bible, as out of it, no connection between acts performed and disease. And if the contrary were the case, we should find that the righteous and the wicked could be designated by their relative degree of health, and we should be constantly led to inquire, "Who did sin, this man or his parents?" From infancy to old age,

the innocent and the guilty are alike subject to the uncertainties of disease, and death may occur at any period of life, a few only ceasing to live by the effects of old age alone. The beginning and end of human life are only steps in an eternal existence, the principles of both death and life being bound up together from the inception. But if disease had no other purpose nor end than death, it would be an anomaly in the works of the Creator, comprehending an arrangement of vitality without salutary tendencies; labor and sorrow would be the end of all our days; life would be a burden, health beyond hope, and eternity a new creation. No, no; disease was not instituted simply as a road to death. The inherent aversion of man to live for the future needs a constant monitor; and this is the beneficent purpose of disease, than which it is impossible to imagine anything else so well calculated to impress the mind with the necessity of a constant state of preparation for death. Its purpose may, indeed, be disregarded, in which case the visitation will be unprofitable, as it was with the Philistines, but not on this account altered. "And do ye not know their tokens, that the wicked is reserved to the day of destruction? they shall be brought forth to the day of wrath." Job fully exemplifies the purpose of disease to be righteous in his pre-eminent display of integrity, meekness and piety. And Lazarus, likewise, was "not sick unto death, but for the glory of God." "Bible Hygiene" is an excellent concordance of Scripture texts on hygiene, and except the illogical conclusion of the author, which we have felt it necessary to discuss somewhat in detail, on account of the fascinating nature of the subject, we heartily commend it, especially to clergymen who have so much less to say than they ought to on a subject so intimately connected with their calling. Philadelphia: Presley Blakiston, publisher.

Public Health and Sanitary Reform.—A sermon, preached in the First Presbyterian Church, Auburn, N. Y., June 20th, 1880, by Rev. Charles Hawley, D.D., from the text: "There shall be no more thence an infant of days; nor an old man that hath not filled his days; for the child shall die a hundred years old; but the sinner being a hundred years old shall be accursed."—*Isaiah* LXV:20.

The Rev. Doctor admirably sets forth the benefits of sanitary science, by which the average duration of human life has been more than doubled during the last three hundred years; pauperism, vice, and crime lessened, and public wealth greatly increased wherever public sanitation has been administered. We trust his example may have an abundant following by other divines, for such "is the dictate of piety, not less than of advanced medical science."

Nature's Hygiene* is the comprehensive title of a somewhat enthusiastic work chiefly devoted to a consideration of the sanitary properties of the *Peroxide of Hydrogen* as the active property of the Eucalyptus and the Pine. The special properties usually attributed to ozone as "Nature's Purifier" and disinfectant, the author of this work advocates should be ordinarily assigned to its more potently, the peroxide of hydrogen, which appears to hold the same relation to water as ozone to the air; but much more abundant. Its presence in rain-water and dew is accounted for by its existence as a vapor, and ready solubility in the falling drops. In the strata of the atmosphere accessible to investigation it is said to be greater the higher the sun rises above the horizon, and most abundant over areas of aromatic vegetable life near the equator. "Probably every plant and flower of perfume (including all those which are known to secrete essential oils) generates peroxide of hydrogen into the atmosphere by the joint or successive action of air and water upon the said oils and perfumes."

The Eucalyptus and Pine belong to this category of aromatic plants, and to their extraordinary power of giving off peroxide of hydrogen in the form of vapor our author attributes their anti-malarious influence, by oxidation; the peroxide of hydrogen (and ozone) being decomposable by all substances which admit of being easily oxidized.

"All animal and vegetable substances in a state of change or decomposition are rapidly acted upon by peroxide of hydrogen, much more vigorously indeed than by ordinary air or even pure oxygen. . . Curiously enough, it not only exercises a disinfecting action by virtue of its powers to give up oxygen to decomposing matters, but it can absolutely arrest decompositions" under certain circumstances.

The author has, by comprehensive study and various experiments, collected a large mass of evidence on the sanitary properties of the Eucalyptus and Pine; and, withal, is the originator of "*Sanitas*"—a solution of the peroxide of hydrogen—as a disinfectant. This solution is at least, on the evidence submitted, a powerful oxidizing agent, which promptly arrests putrefaction, and is, therefore, inferentially all it pretends to be.

The book throughout is deeply interesting in both matter and style, and a valuable contribution to sanitary science.

---

*Nature's Hygiene: A Series of Essays on Popular Scientific Subjects, with Special Reference to the Chemistry and Hygiene of the Eucalyptus and the Pine. By C. T. Kingzett, F.C.S., London and Berlin, Member of the Council of the Institute of Chemistry of Great Britain and Ireland; Author of the History, Products and Processes of the "Alkali Trade;" and "Animal Chemistry; or, The Relations of Chemistry to Physiology and Pathology." 8vo, pp. VIII–192. London Bailliere, Tindall & Cox. (Paris and Madrid.)

Corfield on Health* will be sure to have many readers, because of the high repute of the author as a practical sanitarian. It consists of a course of nineteen lectures on the Laws of Health, delivered at the rooms of the Society of Arts under the auspices of the National Health Society, London. It is an elementary work, wholly devoid of technicalities, and cannot fail to be of great practical utility to non-professional readers, and to beginners in practical sanitation. Beginning with the anatomy of the human body, he proceeds in a series of concise lectures to describe the tissues of the body, the circulation of the blood, respiration, nutrition, the liver and the excretory organs, food and digestion, structure of the nervous system, and other functions. Under the heads of Climate and the Sanitary Arrangements in Houses, he is especially at home, and gives much valuable information on a subject of universal interest.

The Germ ? is the subject of two brief papers before us, by Dr George M. Sternberg, Surgeon U. S. Army. One, an address delivered before the Louisiana State Medical Society, reprinted from the *New Orleans Medical and Surgical Journal* for May, under the title of "The Microscopic Investigations of the Havana Yellow Fever Commission," and the other an abstract of an address delivered about the same time, before the Young Men's Christian Association of New Orleans on "Dust and Ditch Water." Both account of the same diligent, but still fruitless search after the yellow fever germ, as yet only known theoretically by a very complete knowledge of its habitat and the conditions of its existence. These are practically summed up before the Christian Association as follows:

"While there can be no putrefaction without germs, so there can be no increase of germs without a supply of putrefying material, and as the germs themselves, or the gases evolved when putrefactive changes are taking place, have a very deleterious influence upon the health of man, it is evident that this is to be counteracted, not by destroying the germs or neutralizing the gases in the atmosphere—an impracticable task—but by cutting off the supply of refuse organic matter upon which they depend for reinforcements; in other words, if you wish to breathe a pure and health-giving air, you must see to it that it is not contaminated by gases and loaded with germs given off from foul privies, stagnant ditches, stinking cess-pools, and the dead bodies of men and animals buried within your city limits."

Muscle-Beating; or, Active and Passive Home Gymnastics, for Healthy and Unhealthy People, by C. Klemm, Manager of the Gymnastic Institution in Riga, is an illustrated pamphlet of fifty-six pages,

* Health. By W. H. Corfield, M.A., M.D. (Oxon), F.R.C.P., Professor of Hygiene and Public Health at University College, London, etc., etc. New York: D. Appleton & Co.

giving an interesting sketch of gymnastics in general, with a particular account of the novel process of "muscle-beating," or gentle flagellation with a conveniently arranged bundle of elastic tubes fitted to a handle, to be applied over any desired part of the body by the individual subject to—it may be—cold feet and hands, muscular debility of the extremities, lame shoulders, stiffness of the muscles or joints, or any affection in which the superficial circulation is deficient. The work is suggestive and especially commendable to chronic invalids and persons of sedentary habits. New York: M. L. Holbrook & Co.

Johnston's Chemistry of Common Life* first made its appearance about twenty-five years ago, and was among the earliest efforts to popularize the study of chemistry. The work consists of thirty-four chapters on THE AIR WE BREATHE, THE WATER WE DRINK, THE SOIL WE CULTIVATE, THE PLANT WE REAR, THE BREAD WE EAT, THE BEEF WE COOK, and twenty-eight other subjects of equal importance to common life. The author's novel and charming method of introducing the facts and reasonings of chemistry to the general reader, at once attracted the attention of hosts of readers, and it has been a popular book ever since its first publication. This new edition comprehends all the recent advances in chemistry in the scope of the work, while it continues to maintain the attractiveness of style in the presentation of the subject, which distinguishes it as one of the best popular-science books ever written.

Wood's Library of Standard Medical Authors for 1880.—*Savage's Female Pelvic Organs*,† is an achievement in the art of bookmaking which all medical practitioners should make haste to avail themselves of—a work which has hitherto cost from fifteen to seventeen dollars, brought down to *one dollar and a quarter*—and alone worth the subscription price of the whole series of twelve volumes.

---

* The Chemistry of Common Life, by the late James T. W. Johnston, M.A., F.R.S.S., L. & E., late Professor, etc., etc.; a new edition, revised and brought down to the present time, by Arthur Herbert Church, M.A., Oxon, author of Food, its Sources, Constituents, Uses, etc., etc. New York: D. Appleton & Co.

† The Surgery, Surgical Pathology and Surgical Anatomy of the Female Pelvic Organs, in a series of Plates taken from Nature, with comparative notes and cases. By Henry Savage, M.D., London, Fellow of the Royal College of Surgeons of England, one of the Consulting Medical Officers of the Samaritan Hospital for Women, 3d edition, revised and extended; 32 plates and 22 wood engravings, with special illustrations of the operations on vesico-vaginal fistula, ovariotomy and perineal operations. New York: Wm. Wood & Co.

Trousseau's Treatise on Therapeutics,* 3 volumes (1 and 2 now published) should, and doubtless will, be among the most welcome books of the year to all general practitioners. This admirable work has long been a standard. Numerous editions until the ninth, from which this translation has been made, have kept it constantly abreast with the great advances made in therapeutics in recent years. It is consequently one of the most complete works in this branch of medicine, and few physicians can afford to do without it.

Putzel's Functional Nervous Diseases,† is a new contribution to this rapidly-becoming popular speciality, and being the latest is presumably—at least ought to be—the best. At any rate, it is an admirably written and well arranged work, characterized by both freshness and strength in the matters treated of, and omitting such as are common to works on practical medicine. A veritable *addition* to medical literature—a work composed on the clinical experience of the author and not made up of the observations of other writers.

The Prospective Advantages of Baltimore as a Medical Centre, by John Van Bibber, M.D., pamphlet reprint from the *Maryland Medical Journal*, for April, is an admirably written paper, on the extraordinary advantages for the cultivation of medical science afforded by the three great benefactions of that city—the Johns Hopkins' University, the Sheppard Asylum for the Insane, and the Sanitarium for Children—all richly endowed and in process of equipment. The peculiar adaptability of these admirable institutions, to the purposes advocated by Dr. Van Bibber, is beyond question; and if energetically seconded by the profession and the enterprising citizens of Baltimore, there appears to be no good reason why all that he hopes should not be realized.

The Cinchona Cure for Intemperance, by Charles W. Earle, M.D., reprint from the *Chicago Medical Journal and Examiner*, for February, is a merited exposure of an impostor, who pretends to cure intemperance with alcoholic cinchona bitters, under the name of "Cinchona Cure."

---

* Treatise on Therapeutics. Translated by D. F. Lincoln, M.D., from the Materia Medica and Therapeutics of A. Trousseau, M.D., Professor of Therapeutics of the Faculty of Medicine of Paris, Physician to l'Hotel Dieu, etc., etc.; H. Pidoux, M.D., Member of the Academy of Medicine, Paris, etc., etc., and Constantine Paul, M.D., Adjunct Professor of the Faculty of Paris, Physician to the St. Antoine Hospital, etc. Ninth French Edition, Revised and Edited. New York: Wm. Wood & Co.

† A Treatise on Common Forms of Functional Nervous Diseases. By L. Putzel, M.D., Visiting Physician for Nervous Diseases, Randall's Island Hospital; Physician to the Class for Nervous Diseases, Bellevue Hospital Out-Door Department, and Pathologist to the Lunatic Asylum, B. I. New York: Wm. Wood & Co.

Toxemic Diseases and their Treatment, by W. R. Seaver, M.D., reprint from *New Orleans Medical and Surgical Journal*, is a paper of half a dozen pages on the internal use of disinfectants and chemical agents, and particularly of the tincture of chloride of iron for the prevention and cure of yellow fever and cholera. It is the repetition of an old theory and an old "remedy," abundantly tried, and found wanting.

How to Live in Summer, by Mrs. Amelia Lewis, is an excellent pamphlet of twenty pages, but the title does it injustice; for while the author gives wholesome precepts on "How to Live in Summer," her work is by no means limited to it. It contains the gist of good housekeeping, good food, good cooking, and how, withal, one should be clothed to suit the seasons; there is no housekeeper who would not be the better by the possession of this pamphlet. Price, 10 cents. American News Company, New York.

Health Primers.—*Personal Appearances, Baths and Bathing* and *The Skin and its Troubles*—Nos. 5, 6 and 7 of the series—by eminent physicians of London, first noticed by us more than a year ago (see Vol. 7, p. 141), still maintain their excellence, in both subject and style, and are admirably adapted to general readers. Price, 40 cents each. D. Appleton & Co., New York.

Leonard's Student's Dose Book and Anatomist Combined is a very convenient remembrancer for the pocket, for medical students and young graduates. Price, $1.00. C. Henri Leonard, Detroit, Michigan.

The International Surgical Record, a weekly journal, is among the freshest of the new journals for this year. Devoted to surgery exclusively. $5.00 a year. Achilles Rose, M.D., Editor, No. 1 Chambers Street, New York.

Publications Received.—Smithsonian Report, 1878; Smithsonian Miscellaneous Collections: The Toner Lectures, V., VI., VII. and VIII.; Timin's Artificial Disinfection; Transactions of Medical Association of Georgia, 1880; Gordon's Camping in Colorado; Dunglison's School of Physiology; Transactions of the American Dermatological Association; Smith's Exsection of the Lower End of the Femur; Circulars of Information of the Bureau of Education: No. 2—Proceedings of the Department of Superintendence, February, 1880, No. 3—Legal Rights of Children, Indian School at Carlisle Barracks, Vacation Colonies for Sickly School Children and Progress of Western Education in China and Siam; During's Atlas of Skin Diseases, Part VII.; Seelye's Drainage and Under Drainage in their Sanitary and Economic Aspects.

THE SANITARIAN.

A MONTHLY MAGAZINE.

Vol. VIII. NOVEMBER, 1880. No. 92.

BETTER THAN SEWERAGE?

By RICHARD MCSHERRY, M.D., Professor of Principles and Practice of Medicine, University of Maryland.

There is, perhaps, no question in hygienics more interesting or important than sewerage. All who are interested in public health and prosperity ("Public Health is Public Wealth"), if they dwell in crowded populations, be it in cities, factories, colleges, summer resorts, or what not, are interested, most of them more than they are aware of, in this great question. It often happens that the father of a family migrates with all his flock from a commodious city home to some great modern caravansary, which is proclaimed to be the largest hotel in the State, in a perfectly salubrious region, to gain or recover health for his semi-invalid wife and children. He is, unhappily, liable to be disappointed. The air may be pure and the water good near and around the house, but within, it is as, mayhap, the air he left behind him in his own dwelling: loaded with poisonous miasmata of purely local origin. Drains, sewers, traps, cess-pools, soil-pipes and all, are arranged as if the design were to poison the house and its inhabitants. It often enough happens that people returning from such places bring with them the germs, or originating cause, of an attack of continued fever. This result, or liability, may be expected until the measures of rational sanitary reform shall be understood and enforced in every community.

The attentive reader will observe that complaints are made in regard to the sewerage of nearly all of our cities, by engineers and health officers. In the August number of THE SANITARIAN, the defective sewerage of Philadelphia is shown, with its concomitants and evil results. Speaking of the concomitants, Mr. Addicks, the health officer, remarks: "If I could, I would abolish every private closet in the city of Philadelphia; they should be placed in the open air. It would not be so pleasant or comfortable of course, but a great danger would be averted." The writer endorses this idea to the full.

Again he says, quoting Dr. Rudolph Hering, C.E.: "Modern medical science has made great progress in discovering the causes of the origin and spread of disease; and it is now pretty well established that typhoid fever, diphtheria, scarlet fever, cholera and other malarial diseases, are caused, directly or indirectly, by decomposing organic matter. The efficient removal of all refuse is, therefore, very essential for the good health of the city."

The efficient removal of a large portion of the refuse is to be effected presumptively by good sewerage. There is no good sewerage where the fluids soak away into and penetrate the ground through which they pass, which is often the case. Nor is it good where the sewage does not run off rapidly, or when the sewers are not duly and properly ventilated—upon the whole, good sewerage is very rare.

In a paper on "Unsanitary Engineering," by Dr. A. N. Bell, read before the American Medical Association, Dr. Bell calls attention to the error of design or construction by which common sewers are made to carry off at once soil and surface water and sewage. "Modern engineers," he says, "have generally adopted the plans of the ancients, or built others (*cloaca*), similar to them, of *porous* material, fit only for soil drainage, as the ideal structure for the reception of, and—but not at all adapted to—the conservation and carriage of sewage. The consequence is that the substance of these conduits, the soil and the houses connected with them, are pervaded with the *materies morbi* of unsanitary engineering; and the water carriage system condemned, because, forsooth, engineers have equally failed to profit by the arts of the ancients and the science of physics. From the former they should have long since learned that other provision was made for the treatment of sewage by collection, precipitation, overflow and utilization in a totally different set of receptacles; and that refinements in this art, as compared with much of modern construction, may yet be learned from the revelations of that most renowned temple of wisdom, the Temple of Jerusalem."

It is clear from the above passage that all the wisdom of all the ages is not concentrated in and upon the nineteenth century. They knew many things better thousands of years ago than we, who let sewage permeate the earth under our dwellings, schools, colleges and factories, to send its pestiferous emanations back to sacrifice, by poison, the hecatombs dwelling therein. The foul air from beneath frequently has no escape except through the buildings located over them, which then become, says Dr. Bell, "aspirators—veritable cupping-glasses—the only means of exit by which the carbonic acid and other mephitic gases from soil loaded with impurities of every kind, finds its way of escape! The results may be learned by a study of the mortality statistics."

While writing this communication I learned that the late Mr. Ross Winans, a practical business man and an experimental philosopher, of this city, constructed a large number of tenement houses, wherein arrangements were made for the daily removal (in two sets of metal boxes, used and removed on alternate days) and for the utilization of all the dejecta so commonly deposited somewhere on the premises, to the perpetual detriment of the occupants. Here was a good example for all *rentiers* and landlords.

A confirmation was also brought home to me of the injuries effected by bad drainage and sewerage about the summer resorts. I was informed by members of a family returning from Long Branch that various of the members were sick while there, which they attributed to the fact that foul odors pervaded the rooms of that portion of the great hotel at which they were guests, and, added the lady, "Nothing would ever induce me to return there with my family." It is surely a bad state of things when nominal health resorts become centres of infection.

When the air is polluted it too often happens that the drinking water is so likewise from the same sources.

The readers of THE SANITARIAN may remember a republished letter from Sir Henry Thompson to the London *Times*. This gentleman declared his opinion, upon sufficient grounds, that "our traveling fellow-countrymen owe their attacks of fever more to drinking water, contaminated by sewage matter, than to the malarious influences which pervade certain districts of southern Europe."

He asserts that the addition of wine or spirits to the contaminated water does not counteract the poison. If people want wine, he advises them to drink the wine of the country instead of foreign wines; but he prefers and recommends wholesome table mineral waters, as Seltzers in Germany, Gieshubel in Austria, St. Galmier in France, or English soda waters, all of which may be had in bottles at reasonable prices. In default of these, local waters should be boiled before being used, and the traveler may dash them with tea, or some other flavoring material, and keep his tea bottled for use.

In this model Republic we should take care that drinking waters shall not be contaminated. Hitherto, we have been discreditably negligent in this matter.

We are told upon high authority (Dr. Henry I. Bowditch) that "only one-third of the towns and cities of this nation make any claims, even the most trival, of endeavoring to procure pure potable water for their inhabitants. The remainder (65.73 per cent.) either confess carelessness or ignorance of the subject. In other words, over one-half of the people of these United States are openly and avowedly living in a senseless disregard as to whether they are drinking pure water or water contaminated by every kind of filth.

"We may be quite sure," adds the doctor, "that such recklessness in regard to human life will not exist a half century hence. (Centennial address on Public Hygiene in America).

It will take less than a half century, we trust, to prove the truth of this prophecy.

Defects in sewerage, then, may prove calamitous to populations by the double agency of poisoning the air they breathe, and their drinking water. Our efficient health officer in Baltimore, Dr. James A. Stuart, says that, in the year 1876, his suspicions were aroused in regard to water derived from the city pumps, which was used for drinking purposes by a large portion of the population. He had the water analyzed by Professor Tonry, and also by Professor Remsen, of Johns Hopkins' University, when the analyses revealed the most alarming and disgusting state of things. The result was the passage of an ordinance looking to the condemnation of all the

pumps, and the substitution of public fountains or hydrants in their stead, throughout the entire city. There were many complaints when the pumps were removed, "but I am sure," says the doctor, "much evil has been averted, as is shown by the diminished death-rate in such wards of the city as were most dependent upon, and in constant use of these inexhaustible sources of typhoid fever, and other diseases of a kindred nature."

Privy wells and poisoned pump-water bear the relations of cause and effect to an extent beyond easy computation, in cities and towns principally, but largely in the country also.

Dr. Stuart proposes for Baltimore a system of sewers which, starting from every street, lane and alley in the city, shall connect with every house, and, by increasing dimensions as they go, and proper hydraulic arrangements, shall carry all sewage to final outlets at a proper place and distance from the city.

The apparent expense of such a work would be enormous, but an annual tax, *pro rata* per front foot of each house, would not exceed, it is estimated, $3.00 a year.

Just twenty years ago I took occasion to consider some of these matters in a review of Miss Nightingale's NOTES ON NURSING. A public hydrant was suggested to be placed, *pro bono publico*, on every street corner. "The pumps that are now in use are but very indifferent substitutes for these public fountains, for the water from them is loaded with organic impurities which are exceedingly detrimental to health at all times, but which, under some circumstances, act as direct and fatal poisons. If any one doubts this, we would refer him to reports made by Dr. Snow to the Epidemiological Society of London. During a cholera epidemic, seventy-three persons died in two days in the vicinity of a certain pump. It was afterwards ascertained that the water from this pump was contaminated by a neighboring cess-pool."

This was but an illustrative instance out of many furnished by the same observer in regard to the use of polluted water. His observations have been confirmed by numerous observers in this country as well as in England.

Now allow me to make a quotation from the review just spoken of which is suggestive of something in lieu of, and possibly better than, sewerage:

"Our estimable authoress urges the removal of all offensive *dejecta* from the sick-room at the earliest possible moment. Yes, let them be removed, and, if practicable, let all such material be carried, not to a receptacle in or about the house, but beyond the confines of the city itself. Would it not be a great desideratum to have all effete, decaying and putrescent matter, carried away daily, as garbage is at present? We have seen this reduced to practice. In the city of Mexico, about sunset every evening, a long procession of carts, or hogsheads on wheels, may be seen traversing the streets. One of these carts stops at every door, and a servant brings out one or more covered buckets, which the driver empties into the hogshead. This bears upon it an apparently facetious label—*esencias!* These nameless but odorous essences are then taken off to be used as manure. We believe this is the very best plan for getting them away."—(*Maryland and Virginia Medical Journal, Aug.* 1860.)

The *essences* need not be odorous ; earth, ashes or other deodorant or disinfecting agents would readily correct any offensive or deleterious odor.

They could be taken to designated wharves or depots, thence to factories to be prepared for utilization. The expense to individual householders would be small, and that to the city would be probably compensated by purchasers. The famous gardens around Mexico—once floating but now no longer so—are manured and fertilized by this material, whose gases are equally capable of enriching the earth or of poisoning its inhabitants, according to the distribution.

In common with many other physicians I have seen individuals or whole families thus poisoned. When Dr. Barker made dogs inhale the emanations from cess-pools, they were attacked with vomiting and purging, symptoms of continued fever, insensibility and prostration. His experiments just illustrate what happens to the human race from a similar or the same exciting cause.

Upon the whole, I am disposed to think better of the Mexican plan than of sewerage ; and I think the matter well worthy of the consideration of city authorities and health officers. The best manner of removal may be open to consideration. Perhaps the odorless apparatus companies could be made equal to the daily, or very frequent removal of all the dejecta now left to pass into sewers, or to putrefy by delay in the ordinary receptacles. Be the method what it may, the municipal authorities cannot be better engaged than in rational and honest efforts for saving the people's health and the people's money.

Baltimore, August, 1880.

The Cost of Drink.—The New York *Sun* mentions that the Commissioners of Charities and Corrections of New York have the care and control of "a population of 11,000 lunatics, drunkards, criminals, infants, blind, aged and sick," and that "they have charge this year, of the disbursement of $1,348,383.34 for the maintenance of these unfortunate creatures." It is safe to conclude, in the face of the past reports of the Commissioners themselves, that at least three-fourths of the 11,000 are dependent upon the public charity, either directly or indirectly, through the agency of strong drink, and that fully three-quarters of a million of dollars for their support which will be exacted of the taxpayers of this city will be paid because of the drink-traffic. How long will the taxpayers and the good citizens of this metropolis allow this waste of their substance and this dreadful work of ruin among men, women and children to exist and be perpetuated under the forms of law?

SEWAGE DISPOSAL IN CHARLESTON, S. C.

"SURFACE PRIVIES"—"ENAMELED SANITARY SURFACE CLOSETS," ETC.

Report of Committee of Board of Health, by PROF. MIDDLETON MICHEL, M.D., Chairman.

Sewage, in the sanitary sense in which we use the term, signifies the excrementitious products of the wear and wastes of the body, which, in health, amounts in one year to no less than one ton and a half of material, both solid and fluid, for every adult; an amount largely increased during disease, when this product is reasonably supposed to contain those morbific germs which, in transitional stages of evolution and multiplication, are the means of propagating zymotic diseases.

Were it possible to resolve the science of hygiene into a single problem which would include the questions of contagion and infection, and thereby control the spread of disease, that problem would be the disposition to be made of human excreta. The disposal of sewage, therefore, from a sanitary standpoint, may be said to override all other questions in importance. If the problem has proved a difficult one among sanitarians, it is because the question has been complicated with another relating to the manurial value of the product. Profit, however, should not influence the judgment in matters of health. Divested of all other considerations, there seems to be perfect unanimity among hygienists as to the importance of an *immediate riddance* of this great source of defilement that pollutes first the air, then the water, possibly the food itself, and directly propagates zymotic diseases.

We have entered upon these prefatory reflections as to the nature and importance of this subject, since the question of sanitary improvement upon the present cess-pool and privy plan in use in this city has actually presented itself, in the request of Council, now before us, that we should determine respecting the merits of two different methods proposed for the disposal of this refuse material.

In replying we feel it our duty to declare that there is but one approved method that provides for the immediate removal of sewage from our midst, and that is the water-carriage system—a system particularly to be urged where there is a water-supply fortunately consorted with an outlet to the sea. All other systems which temporarily retain these excremental wastes about our dwellings are simply make-shifts, which in the long run cost as much as a permanent water-work system, and are never entirely satisfactory in a hygienic point of view. We shall not discuss this universally recognized plan of operation which it is the duty of all Boards of Health to urge, where the proper conditions obtain; the perfection of the work rests with the sanitary engineer, but such is its importance, that we could not properly pretermit the subject in this connection, as it becomes the natural sequel to the introduction of a water-supply, such as

Charleston now possesses, and must necessarily be, in the end, adopted, under the favorable condition in which this city is placed.

The substitutes for the present objectionable privy vaults which are now before us, are: the "Surface Privy," and "The Enameled Sanitary Surface Closet." They call for the following comments:

By the first of these it is proposed to cleanse out the present vaults and fill them up with *sand*, at the expense of the city, leaving, with the exception of an excavation of three feet beneath the seat, the excreta exposed upon the surface, and then after two years, a brick cemented vault is to be built, and filled again with *sand*—the principle aimed at being to do away virtually with pits. Let the solid excreta remain exposed upon the surface, while the fluids holding such organic matter in solution as may be, shall be allowed to percolate sand and pass away into the soil.

Such a suggestion cannot be entertained by any Board of Health, and we are obliged to reject it altogether.

Were it even in contemplation to convert our privies into earth closets, still we could not indulge the scheme as proposed, unless under such modifications as the present inquiry and reply shall now indicate.

The conditions for proper sanitation under such an arrangement would be very stringent and absolute, with such modifications of the proposed plan as this inquiry suggests.

It appears that for two years no other receptacle but the previous brick vault is used, and that is filled with *sand*. Sand and gravel permit the rapid subsidence of fluids, which percolate so readily that sand should never be used under any circumstances, particularly as the old brick vault is itself pervious to all fluid contents; and although the contemplated cemented brick one is available, yet it must be remembered that unless of Portland cement it is not reliable even for our cisterns, not being water-tight; therefore, such reservoirs should be made of impermeable material, and should be resorted to *at once*, upon the abolition of the old vault. Again, the earth, or coal ashes, which constitutes an admirable material, must be prepared; the earth must be dried and pulverized, must be carted and stored away; coal ashes should be sifted; saw-dust, from its antiseptic nature an unexceptionally good substitute for either of the already mentioned substances, must always be on hand and at ready command, without which precautions severally considered, these materials lose much of their absorbent properties. It is now essential that either of these articles in use should be applied *immediately*, and in sufficient quantity to completely cover the excretions; all slops are to be excluded, and last, though not least of these requirements, removals must be as frequent as possible, certainly every other week, according to the capacity of the receptacle; for though we acknowledge and recognize the deodorizing properties and value of earth, it is still a question with biologists whether any antiseptic influence is exercised; whether these bodily excretions are *disinfected*. To deprive these refuse products of all odor may remove a nuisance, but to divest them of all danger, the latent germs of disease, when present, must be destroyed by some potent disinfectant, some recognized germicide. That this *sterilization* of the organic matter is brought about simply by earth is

not at all probable, and yet this very point is of the utmost importance. The dejecta of a typhoid or diphtheritic patient may be completely deodorized, but are they disinfected? Yet, with the constant removals which this surface privy system requires, the liberation of diseased germs becomes inevitable. With regard to this subject of removals, Drs. Radcliffe and Buchanan, well known authorities on this particular point, say, "that in all forms of fixed closets, the foremost condition—the one to which all other conditions should yield—is the frequency of the removal of deposited excrement;" especially is this precaution absolute among the poor. Supervision is indispensable among the improvident and ignorant classes.

Made to conform to the above-mentioned requirements, viz., impermeability of the reservoirs, preparation of the material as a deodorizer, and its immediate use, with frequent removals, without which careful observance, under official supervision among the poor, it defeats its hygienic errand. This plan of dry conservancy, earth-closet or surface privy, as a temporary expedient, may greatly improve our present arrangements, but it is very doubtful whether it will be the cheaper of the two proposed contrivances.

The Enameled Sanitary Surface Closet, whose contents are always fluid through the action of an acid, allows the use of the admirably devised pneumatic odorless apparatus, and presents many remarkable features which at once recommend it above all other methods of conservancy. The receptacles are perfectly impermeable, and by the so-called staniferous process, are also unaffected by the strongest acids. This process consists in enameling the inner surface of these cylinders with a preparation of tin, which, being baked, invests the interior with a surface, more or less thick, of different substance from the pottery, the vitreous nature of which resists acids, and these reservoirs are, therefore, very durable.

The administration of the sanitary closets, including disinfectants, is conducted by the company, who constitute themselves inspectors as well as operatives. This antiseptic bath is ever ready to receive the organic refuse that at any moment may reach these surface vaults, and from what we have seen, is aptly appointed to reduce all organic detritus into a fluid condition so sterilized that neither vegetable nor animal organisms can thrive, and the germs in diseased excretions, should any be here, must soon come under the potency of efficient disinfection. We speak of efficient disinfection, for it is time that the physician as well as the public should understand that for these antiseptic agents, called disinfectants, to exercise their power upon the ultra microscopic and mystic particles called the germs of zymotic affections, these poisonous disinfectants should be brought in immediate contact with the first, earliest and smallest amounts of dejections from the diseased bodies of our patients. We may hope to disinfect these at the patient's side, within the bed-room, within the surface cylinder of which we speak, while we are impotent to disinfect a city, or even the shortest street in the same. These fluid contents are removed by the pneumatic process. This, of course, excludes all air, all emanations—is odorless. We cannot too highly commend this, the most perfect arrangement of the various conservancy plans of which we have any knowledge.

These cylinders vary from $10 to $30. At an average of $20 it would require $140,000 for the 7,000 houses of this city. The requisite work would require about $56,000 more—an outlay of about $196,000; the emptying, including the disinfectant, will possibly reach about $56,000 annually.

The earth closet system will cost perhaps as much, possibly more, if directions which we have given be carried out. First, the proper kind of vault would certainly cost from $25 to $30. The frequent emptyings would necessarily increase the expense.

Neither of these projects for the future can properly compete with the constancy, rapidity, cleanliness and self-working of the water-carriage system, which may, in our present financial condition, seem, however, impracticable. Yet we would again beg leave to say something even on this point in its favor.

The complete and separate water-carriage system for a city like ours would not cost more than $300,000. At eight per cent. interest this would call for a yearly income of $24,000. The administration of the system need not cost more than $6,000. Assuming that there are 7,000 dwellings in the city, and estimating them all by the minimum standard of a single closet, and no other plumbing, at a uniform charge of 50 cents per month for each closet, the tax would produce a yearly income of $42,000. The margin of $12,000 would make the enterprise a fair speculation.

Increase of population and an increase in the number of closets, sinks, etc., in the better houses would constitute an important extra inducement.

Such a system would secure the absolute removal beyond the limits of the city of all waste liquid or solid within a short time after its production, before decomposition can begin.

The fact that no other known system secures immediate removal but this water system, is the reason for bringing it so prominently before the public.

If the city will give a franchise to a corporation for this great purpose there will be no difficulty in raising the necessary capital.

It must be observed, however, that this ejectment of sewage directly into the harbor is a proposition still involved in difficulties and doubts. In saying that all of this excremental matter will be drifted out to sea, the question arises, will it, can it be deep, "deep in the bosom of the ocean buried"? This is the question which, in an engineering point of view, will still give trouble. A cursory glance at this phase of the subject shows its embarrassments, and the problem that is yet to be solved:

The chemical changes to which this organic matter is subjected in salt water; its specific gravity; its temperature; the generation of sulphuretted hydrogen, etc., cause it to float; and the erosive influence of salt water in the returning tide will throw some of this excrementitious matter back into the harbor. This is known to be the case where the metropolitan sewage of large cities is delivered at many miles outlet, when the set of the river is seaward.

The befouling of the Thames has always been a source of complaint of exceeding great annoyance, even at an outlet of fifteen miles below London.

Yet we cannot forbear to hope that the problem is not without some satisfactory means of solution where it concerns a harbor with its extensive outlet to the sea.

I can only say that I believe that it would be infinitely better to deliver our sewage into the harbor before decomposition begins, as nearly all will be immediately consumed by fishes, than to store it away in our very midst, in a tropical climate, polluting our wells and infecting many of our cisterns, as is here done.

Mortality Among Seamen.—An official return to the British Parliament states that 4,076 seamen in the British service died abroad in the year 1875, viz.: 1,525 drowned by wreck; 987 drowned otherwise, 306 killed by accident, 15 killed through murder or homicide, 28 suicides, 124 deaths from unknown causes, 1,091 deaths through disease; total, 4,076.

"Nearly 3,000 sudden deaths out of 4,000! What proportion of this frightful slaughter is due to the counter-attraction of drink and drinking establishments may be estimated from the following facts which occurred in Marseilles, France, a few months ago.

"March 18th, 1878. J. C., aged 28 (married, 4 children), of bark *Arbutus*, carried down drunk to his hammock, and found dead there next morning.

"May 5th, 1878. H. R., aged 26 (married), ship's carpenter, on board steamer *Himalaya*, after heavy drinking, attempted to cross the plank from the ship, fell in, and was drowned.

"May 20th, 1878. G. S., aged 53 (married, 6 children), was imprisoned in February for having, while drunk, stabbed a companion; on release, left the port, returned on board the steamer *County of Sutherland*, went on shore, and after being missed for five days, his corpse was found in the docks.

"June 16th, 1878. J. L., aged 26, night-watchman on board English steamer *Helmstedt*, fell or precipitated himself into the dock. Body recovered seven days after.

"Here we have," says the Chaplain of the AMERICAN SEAMEN'S FRIEND SOCIETY at Marseilles, "within three months, four British seamen in the prime of life, destroyed by drink, leaving three widows and ten orphans! Mentioning this to a mate in port, he assured me that during the ten days his steamer was at Odessa last spring, no less than three British seamen perished there under similar circumstances. Of the five men now imprisoned here, four of them said, two days ago, they were there for having taken 'a drop too much.'

"Such facts tell more eloquently than any words," adds the Chaplain, "the necessity of more earnestly, actively bestirring ourselves in behalf of our seamen. In the endeavor to elevate them heavenwards, there should be concurrently with evangelization, special efforts and agencies against their special temptation, Intoxicating Drinks."—*Sailors' Magazine.*

SOME OF THE RELATIONS WHICH MODERN HEALTH BOARDS BEAR TO THE MATERIAL PROSPERITY OF THE PEOPLE.

Abstract of a Letter addressed to the Common Council of New Haven by Prof. WM. H. BREWER, President of the Board of Health.

The *first* need of civilized society is the protection of life and property from violence. Without this, civilization itself is impossible; hence it has been the first and greatest aim of all nations and communities, in all ages and in every stage of social progress. To secure it, laws are made, penalties imposed, and all the expensive machinery of courts and officers have been devised and are supported, armies are maintained and wars waged, when necessary; for national existence as well as civilization depends upon it. In these latter days, and as an outgrowth of an enlightened civilization, along with this protection, personal liberty has been better secured, until now the importance of this ranks next to personal security from violence; but, in all times, the liberty of the individual has been held to be subordinate to the safety of the community.

In these modern times, and as matters now stand, with both of these secured, there is still another requisite for a community to be *prosperous*. Each individual who constitutes the community must not only be protected in his person, property and liberty, but his life and health must also be protected from certain diseases and dangers whose power for evil have grown along with our civilization. For an individual to prosper by his labor, he must be reasonably well, and this is just as true of a community or State as it is of the individual or family. The industrious laborer may be thrifty, and add to his savings year by year, if he be well, but when sickness comes upon him and his earnings cease, then his savings go and his property is soon eaten up. Or if he have much sickness in his family, however industrious he may be, he cannot be thrifty, for sickness is more expensive even than luxury. And this is just as true of a city or a community. In the intense competition of these modern times, no sickly community can be prosperous. It may be intelligent and moral and industrious, but it must be poor, and it is to this aspect of the importance of public health to which I wish now to call your especial attention.

Every student of history and of political economy notices the wonderfully rapid accumulation of wealth and capital in modern times, compared with what it has been in previous ages. The material wealth and working capital of the civilized world has more than trebled within less than a lifetime. The accumulation of wealth and property (and it is this which represents the aggregate savings from labor) during the last few years more than equals all that had been saved in all the thousands of years that had gone before, and that, too, while there has been a more general enjoyment of the comforts of life, and a much greater indulgence in its luxuries.

The nature and sources of this rapid growth has been the subject

of much discussion by statesmen and political economists. The causes usually assigned are the invention of modern machinery, the use of steam as a motor, the growth of modern means of transportation by sea and land, the application of the natural sciences to the arts and industries, the spread of popular education, the diminution of wars and the production of the precious metals.

There is no question but that each and all of these have had their influence, but there is one still greater cause which is too often overlooked, simply because it is not so conspicuous. The greatest of all causes is to be found in the better average health of civilized countries, and the longer average term of life which is now secured to working men.

It was not merely war, nor because they did not have steam, nor did not know about greenbacks, that kept the masses in poverty all through the middle ages—it was disease, and the death that came from disease, that kept the nations poor.

With all our material resources, with all our boasted inventions, our railroads and our steam-power, we would be as poor to-day as they were then, were disease so common, pestilence so terrible and wasting, and the average years of a man's working life so shortened, as they then were.

The history of the middle ages is a sad succession of plagues, of cities devastated, of States impoverished, of laborers swept away in millions, by successive waves of pestilence that followed each other as often as cities grew populous. Between the common sickness which was ever present, and the pestilences which swept off their millions at a swoop, the average period available for actual labor in man, was perhaps not more than half what it now is. Meanwhile, it took just as long to rear children to a working age as now, and sickness was just as expensive; so, between the diminished power of production, the waste by sickness, the panics and checks to commerce caused by plagues which were raging somewhere all the time, it is no wonder that wealthy people were comparatively few and the masses sunk in abject poverty.

If we are tempted to think that we are saved from this by steam, or machinery, or increased production of the precious metals, let us look at any pestilence-stricken city of modern times. A single pestilence of but a few months came near bankrupting Savannah, and laid a check on her progress and a burden on her resources which it will take many long years to overcome. Or, worse still, Memphis with its two pestilences. And such may be the loss to any American city if it neglects sanitary laws.

Our modern civilization is one of intense competition. Each producing community is now in a struggle with all the rest of the world, as it never was before. If it have any special advantage it may prosper; if it have any special disadvantage, it either lags behind in the swift race, or by standing still it relatively declines, or else it goes under in the hard struggle of productive or commercial competition. And what heavier burden to bear than sickness?

And yet this fact is liable to be overlooked or forgotten. The healthy man hopes that sickness will never come and may be careless of his health, and the healthy community rarely awakens to danger until epidemic sickness sets in, and then the loss is actually begun.

It is the part of sanitary science to point out the dangers and suggest means of prevention, and when epidemics actually set in, to suggest remedies; it is the part of sanitary legislation to provide means to apply these remedies; it is the function of Health Boards to administer them. But from the nature of the case, the better they do their work the less obvious are their labors. The officer who heroically stands at his post during the time of pestilence, labors to stay its dread work, helps the suffering and comforts the dying, is a hero, and the heroism is of a kind that can be seen, no praise is too high; but the other officer, who by his labors *prevents* the pestilence and keeps it so far off that the danger is scarcely seen, receives no such praise—too often, in its stead, criticism and opposition and indifference.

It is because of the nature of sanitary work, that its value in increasing the prosperity of a city is so often overlooked. In the ordinary pursuits of business the clang of machinery, the brilliancy of the applications of science to the arts, the bustle of business, the romantic ways in which the precious metals have been discovered and won, are more conspicuously in the eyes of the public than the quiet, persistent, unromantic but heroic fight with unseen but unwholesome influences which lurk in the air of our towns. These malicious influences, mostly growing out of our modes of life, are ever present in all our cities, ever growing unless checked, always producing disease, and from time to time, specially inviting pestilence, as persistent as sin, as tireless as nature, and as pitiless as death.

The rapid growth of town and city populations, as compared with the country, during the last forty or fifty years, has been made possible only by the power which modern sanitary science gives us to prevent, to check, and to combat epidemics. As matters were before, a pestilence of but a few weeks or months would put back the growth of a city for years. This city has had but one visitation of yellow fever; it lasted scarcely two months, and, from all I can ascertain by a careful investigation of the matter, it took from eight to ten years to recover from that shock. Indeed, can we say that it *ever* recovered? What New Haven might have been, had it not been for that check, just at a time of rapidly growing commercial importance, we can never know, but that citizens left with their capital to go into business elsewhere and never came back, and that trade left the place and never returned, is certain. What "*might have been*," had this pestilence not fallen on us eighty-six years ago, we can never know; what *may be* if another pestilence comes, we know well. Too many cities have had such a bitter experience, even in modern times, for us to be ignorant of the effects.

We insure our manufactories from loss by fire to ensure their being rebuilt if once burned—even with this, the temporary suspension of the work may drive trade elsewhere. Hence, premiums are cheerfully paid to guard against the possible contingency, and, before the conflagration comes, we cheerfully purchase fire engines and apparatus, and organize skilled men to use them when the emergency comes. Here it is recognized that all this, though expensive in the beginning, is cheap in the end, and yet how reluctantly any such means are taken to guard against a worse destroyer of our wealth and prosperity!

The arguments used even by official bodies against adequate support of public health administration in many, if not most, cities, are curiosities of inconsistency, and will be cited as such by the next generation.

It must not be forgotten that Health Boards are now more strongly demanded and called for because of their pecuniary importance than because of their function in allaying human suffering or saving human life. So long as merely men died and health was lost, and sorrow fell on thousands of homes, Memphis went on as of old, dug her cess-pools deeper and more of them, and did without sewers, but when the loud voice of Trade cried out, "We cannot afford to allow Memphis to longer stand as a menace to the commercial prosperity of the great Mississippi Valley," then, and not till then, was a system of sewering begun.

A high death-rate means lessened vigor, lessened powers of production, a check on prosperity, a burden on industry. A low death-rate, in modern cities, can only be secured by public sanitation, and by an intelligent and efficient co-operation of the public with an active Health Board. A single epidemic but one-fourth as bad as that in Memphis last year, would cost this city more and leave us with higher taxes that the most expensive system of sewers and of garbage collection than was ever dreamed of here. *And there is nothing to prevent it, except public sanitation.* We had that very disease here once, and the city did not recover its prosperity for ten years, and it lost some phases of prestige which it never regained. An epidemic of small-pox a few years since lost to the city of Philadelphia, in ways which could be estimated, above twenty millions of dollars. This city a little later was seriously threatened with a similar epidemic which was effectually stayed, and the health officials were perhaps more severely criticised for their work than for any other one thing they have ever done! The results, however, have amply demonstrated the wisdom of their action.

The fact wants to be kept before the public that as production and commerce and trade are now carried on, few cities can afford to allow a pestilence to invade them. *And if it comes to a city with the natural advantages of soil and climate we have, it is due either to official ignorance or public neglect.* There is perhaps not a single kind of pestilence which has afflicted any civilized city of temperate climates, during the dark ages or since, over which we have not now control, if the community act up to the light and knowledge we have; and, on the other hand, as business is now carried on, no city can now be so afflicted as many then were, and not be bankrupted and financially ruined.

Moreover, a pestilence is only an intensified manifestation of disease; most of its disastrous effects may be produced by the less intense form of prolonged but general ill-health, and it is perfectly safe to say that no northern city can be really prosperous and really sickly at the same time. The health of people is the real foundation upon which the prosperity of the city and the wealth of the community depends.

The money value to New Haven of a reputation for healthfulness should not be slighted or under-estimated in our efforts to maintain our beautiful and our beloved city, and no one single fact will do more

to foster and maintain our material prosperity than to continue to have "the lowest death-rate of any seaport of its size in the world."

Trusting that your honorable body will give this subject that thoughtful consideration which its importance demands, I am

Your obedient servant,

WM. H. BREWER, *President.*

The Boston Sewage Works.—*Harper's Weekly* thus discusses Boston's new sewage system: "Until recently, in almost all sewer systems, and still in most American ones, the sewers have been allowed to empty their contents into the nearest water, without reference to its ultimate destination, or the proximity of population. English sanitarians first announced that sewage was a constant source of danger unless discharged remote from habitations, at points whence it could not return. Most foreign cities have already expended sums, often amounting to many millions of dollars, in constructing works to convey their sewage to safe places of deposit—miles beyond their limits. Boston is the first large American city to institute a similar reform.

"The general plan at Boston comprises a system of low intercepting sewers along the margins of the city, to receive the flow from the already existing sewers; a main sewer, into which the former empty, and which, crossing the city, leads to a pumping station at the sea coast; pumping machinery to raise the sewage about thirty-five feet; an outfall sewer, partly in tunnel, leading from the pumping station to a reservoir at Moon Island, in the harbor, from which reservoir the sewage accumulated during the latter part of ebb, and the whole of flood tide, is to be let out into the harbor during the first two hours of the ebb tide.

"The reservoir is to cover five acres, and will be emptied just after each period of high tide, at which time the currents setting seaward from the island will carry the sewage well outside of the harbor. What will be its ultimate destiny is a matter of surmise, but it has been stated by scientists that all organic particles will probably be oxidized by the water, or will be assimilated by the myriad organizations which pervade the sea.

"In all, some fourteen miles of mains and intercepting sewers, beside the other works, are to be constructed. Eight miles of these are now finished, or nearly so, and it is hoped that within three years the whole works will be completed. The whole cost is estimated at $4,000,000."

This may seem a large sum of money, but the advantages in the health of the population to be gained by the discharge of the sewage at a distance from the land, will more than pay the cost in the first ten years. Boston, more than almost any other Eastern city, has needed a great work of this kind. When the works are completed a marked decrease in the death-rate may be looked for.

HUMOROUS PHYSIOLOGY.

A report on the examination of girls in Board Schools, for the prizes offered by the National Health Society, was recently presented to the London School Board. The examination was attended by 215 girls from eleven schools at four centres, viz.: Medlum Street, Saffron Hill, Ben Jonson School, and Westmoreland Street. It is suggested as the reason why, out of 234 girls' schools, only eleven sent competitors, that physiology is taught as a specific subject in so very few girls' schools. And even in the representatives from these schools Mr. McWilliam, who held the examinations, noticed an abundance of faults.

Many of the children appear to have been utterly unable to understand the terms of the questions. "Mention any occupations which you consider to be injurious to health, giving reasons for your answer." This question, Mr. McWilliams says, especially appears to have puzzled them. One girl's complete answer to this question is, "When you have a illness it makes your health bad, as well as having a disease." Another says, "Occupations which are injurious to health are carbolic acid gas, which is impure blood." Another complete answer is, "We ought to go in the country for a few weeks to take plenty of fresh air to make us healthy and strong every year." Another complete answer is, "Why the heart, lungs, blood, which is very dangerous." The word "function" was also a great puzzle. Very many answered that the skin discharges a function called perspiration. One girl says, "The function of the heart is between the lungs." Another says, in answer to "What is the function of the heart?" "Thorax." Another girl in answer to the sixth question says, "The process of digestion is: We should never eat fat, because the food does not digest."

Another class of errors is that of exaggerated statements, one girl answering, "A stonemason's work is injurious, because when he is chipping he breathes in all the little chips, and then they are taken into the lungs." Another says, "A bootmaker's trade is very injurious, because the bootmakers always press the boots against the thorax, and therefore it presses the thorax in and it touches the heart, and if they do not die they are cripples for life." Several girls insist that every carpenter or mason should wear a pad over the mouth; and one girl says that if a sawyer does not wear spectacles he will be sure to lose his eyesight. Finally, one girl declares that "all mechanical work is injurious to health." Another child says that "in impure air there is not any oxygen; it is all carbonic acid gas." Another says that if we do not wash ourselves "in one or two days all the perspiration will turn into sores."

One girl states that "when food is swallowed it passes through the windpipe and stops at the right side; some of it goes to make blood, and what is not wanted passes into the alimentary canal." Another girl from the same school says, "Venous blood is of a dark black color, and when it reaches the heart it is made by the heart a bright red color."

Several girls from the same school repeat this last error. Another girl says, "The chyle flows up the middle of the backbone and reaches the heart, where it meets the oxygen and is purified." Another says, "The work of the heart is to repair the different organs in about half a minute." Another says, "We have an upper and a lower skin; the lower skin moves at its will, and the upper skin moves when we do."

In many of the papers errors in spelling are very numerous. One child says "The heart is a *comical* shaped bag." Another says, "The upper skin is called *eppederby*, and the lower skin is called *derby*." Another says the organs of digestion are "Stomach, *utensils*, liver, spleen." Another speaks of the "*elementry cannal.*" Another says that digestion is reducing our food into a "*plump.*" Another says that in the heart "There is a fleshy *petition*, and it is divided into four parts, called the left *artilary*, the right *artilary*, etc." Of the simple word "*chew*" the inspector noted three distinct variations. One girl says, "First we put the food in our mouth, then it is *shewed;* some people say our food is *shewed* 27 times." Another says, "The process of indigestion is that when we do not *eschew* our food enough it gives us indigestion." "The loss of teeth is a serious matter, as we cannot *schew* our food enough." Another says, "First, before we can swallow any food, it *as* to be *jewed*, and *their* is a substance which helps to *jew* it called saliva, and in that saliva *their* is a substance which is called ptyalin."

The errors, of which those mentioned above are samples, are confined for the most part to the papers of Standard IV. and in a less degree to those of Standard V. On the other hand, Mr. McWilliam says the papers of Standard VI. and Ex-Standard VI. girls are many of them very well written indeed.—*London Globe.*

———o———

Children's Hats.—Now that the sun is again occasionally visible, it may be worth while to remind parents that the use of a child's hat is to cover its head, and that the use of the brim is to shade the eyes. It is painful to see infants and little folk of tender years with half-closed eyelids, corrugated brows, and faces screwed up and distorted by the glare of the sunshine, from which they ought to be protected. Fashion is the Juggernaut of life all the world over, and children are tortured with the kindest intentions in the worship of the hideous monster; but it is needless to inflict petty sorrows and annoyances which do not actually form part of the orthodox sacrifice to folly. While children are beneficently allowed to wear hats with brims, these useful appendages should be turned down so as to shade the eyes. This simple precaution will save considerable pain, spare some trouble with the eyes, and produce a more pleasing expression. Children who are perpetually struggling to keep the sun out of their eyes, do not either feel amiable or look happy, as a walk in one of the parks any fine morning must convince the attentive observer.—*The Lancet.*

THE INTERNATIONAL SANITARY CONFERENCE.

The honorable Secretary of State transmits, in a communication to Dr. J. L. Cabell, the President of the National Board of Health, the following circulars to the ministers representing the United States at the capitals of the several maritime powers of the world, inviting those powers to send delegates to an international sanitary conference to be held in Washington, January 1, 1881:

DEPARTMENT OF STATE,
Washington, July 30, 1880.

SIR: I have to state for your information that in pursuance of a joint resolution of Congress, which was approved on the 14th of May last, the President has determined to call an international sanitary conference to meet at Washington, and to invite to join in the proposed conference the several powers having jurisdiction of ports likely to be infected with yellow fever or cholera, with a view of securing the adoption, by the powers in question, of an international system of notification as to the actual sanitary condition of ports and places under the jurisdiction of such powers, and of vessels sailing therefrom.

I inclose herewith a memorandum, in which the circumstances which have induced this government to ask those of other nations to join in the proposed international sanitary conference are set forth, and which concludes with a statement of the specific propositions which the President would desire to submit to the conference.

In view of the urgent necessity which, according to the experience of this government, exists for prompt action in reference to this matter, I have to instruct you to lose no time in calling the attention of the government of to this subject, by transmitting for its information a copy of the memorandum above mentioned, and by asking it at the same time to take into consideration the expediency of holding a conference of the character proposed, and requesting it to communicate its views on the subject to this government at as early a date as may be convenient.

You may add that it is thought by the President that such delegates as may be appointed by the several powers to attend the proposed conference should be authorized to conclude, if deemed expedient, upon consultation, an international convention, in relation to any proper subjects for international sanitary regulations to be proposed for the consideration of the governments interested.

In order that the proposed conference, if agreed to by the several foreign governments interested in the subject, may be held at as early a period as practicable, the President deems it expedient to suggest the first day of January, 1881, as a suitable date for the assembling of the conference in the city of Washington. In the event, however,

that the government of should have occasion to prefer a different date for the meeting of the conference, this government will be ready to reconsider the question with a view to an alteration in the date.

I am, sir, your obedient servant,

WM. M. EVARTS.

MEMORANDUM IN RELATION TO POINTS PROPOSED TO BE SUBMITTED TO AN INTERNATIONAL SANITARY CONFERENCE.

DEPARTMENT OF STATE,
Washington, July 29, 1880.

A joint resolution of the Senate and House of Representatives of the United States, approved May 14, 1880, authorized the President "to call an international sanitary conference to meet at Washington, District of Columbia, to which the several powers having jurisdiction of ports likely to be infected with yellow fever or cholera shall be invited to send delegates, properly authorized, for the purpose of securing an international system of notification as to the actual sanitary condition of ports and places under the jurisdiction of such powers, and of vessels sailing therefrom."

This resolution has its origin in the practical difficulties which have been encountered in the administration of the regulations and rules recommended by sanitary experience, and framed by the legislation of the country, to the end of preventing the introduction and spread of yellow fever, cholera, and other contagious or infectious diseases in the territory of the United States. The extensive prevalence of yellow fever in certain parts of this country during the past two years, and the almost continual existence of the danger of the introduction of such contagious or infectious diseases as yellow fever and cholera by vessels coming to this country from infected ports abroad, gave rise to such legislative measures, but the difficulty in their application has been chiefly owing to the fact that in certain foreign ports where infectious or contagious diseases have existed, or were supposed to exist, the local authorities have shown some hesitation as to co-operating with the consular and medical officers of the United States in carrying out regulations deemed essential by this government as a sanitary safeguard.

Moreover, in consequence of the vague and untrustworthy evidence obtainable in some cases as to the sanitary condition of suspected foreign ports, vessels coming thence to the United States have in some instances, as it has afterwards appeared, been subjected to unnecessary quarantine in the ports of this country. On the other hand, vessels from non-infected ports of the United States have been compelled to submit to like unnecessary and vexatious delays by the quarantine regulations of other countries, based upon imperfect knowledge of the sanitary condition of American ports.

The joint resolution of Congress quoted above contemplates only securing "an international system of notification as to the actual sanitary condition of ports and places," and does not touch on the broader and more intricate question of the preventive sanitary measures imposed in the ports of each country, in conformity with its own

laws, and in proportion to the danger of outward communication and internal spread of epidemic disease at the port of introduction. The Government of the United States, recognizing the essentially local character of quarantine requirements, and their adaptability to the sanitary conditions and risks in the districts where they are applied, would not seek to propose any international code of general quarantine laws, even did the system of State and Federal Governments in the United States favor bringing the sanitary precautions of the seaboard States from Texas to Maine, with all their varying conditions, under one governmental code.

But the President is of the opinion that the great inconveniences and losses which the commerce of the world has been and is now suffering from the delays and obstructions caused by unnecessary quarantines, can, to a great extent, be relieved by the establishment, as contemplated by the Congressional joint resolution of May 14, 1880, of an international system of notification as to the actual sanitary condition of ports and places likely to be infected with communicable or epidemic diseases. And following the authorization of the resolution referred to, he has, therefore, deemed it proper to submit to the governments of the chief maritime powers the expediency of holding a conference at an early day in this city to consider the subject of a proper and applicable scheme of such international notification.

The specific propositions which the President would desire to submit to the proposed conference would include the following:

A. The establishment of a reliable and satisfactory international system of notification as to the existence of contagious and infectious diseases, more especially cholera and yellow fever.

B. The establishment of a uniform and satisfactory system of bills of health, the statements in which shall be trustworthy as to the sanitary condition of the port of departure and as to the condition of the vessel at the time of sailing.

The discussion of these points would involve, among others, the following questions:

I. Who should be the certifying officer or authority as to the sanitary condition of ports and places and of vessels?

II. How can the certifying authority obtain trustworthy information as to the actual sanitary condition of ports and places and as to the presence of contagious and infectious diseases?

III. When yellow fever or cholera exists at or in the vicinity of a port or place, what examination should be made of a vessel sailing therefrom to secure a trustworthy knowledge of her sanitary condition?

IV. To what extent, and under what conditions, should a clean bill of health be considered as affording satisfactory evidence that the vessel is free from danger of conveying infectious disease?

V. In what way can trustworthy information be obtained from ports or places in countries which have imperfect or unsafe quarantine and sanitary regulations, and which may be unwilling or unable to adhere to the proposed international system?

VI. Whether a schedule of graduated penalties could be fixed to be exacted from vessels for various offenses arising under the proposed international system?

MEMPHIS AND HER JUBILEE.

Redemption day, which Memphis so fittingly and so auspiciously celebrated on the 22d day of September, 1880, is the beginning of a new era in her history, and annually, we trow, in memory of the event which gave rise to it, the celebration will be repeated as the day wherein the people "turned from mourning into a good day: that they should make them days of feasting and joy."

Memphis does nothing by halves; she claims to be the largest town in the world of her size; she has had the biggest and most fatal epidemic, in proportion to her number of inhabitants, of any modern city, and she tolerated the causes which gave rise to and sustained it, to a degree almost, if not quite, unequaled. In her suffering and subsequent depression she excited the sympathy of the whole country, her name was everywhere mentioned with sorrow. But in the end she has shown a courage, spirit and resiliency, triumphant of all her woes; and all who extended her a helping hand in her hour of need rejoice in her worthiness and applaud her victory. Help to those who would help themselves has never found a clearer echo, a people more keenly appreciative of benefits conferred, or more capable of giving them expression.

We are indebted to the *Appeal* for an abstract of the proceedings.

The scene is described as one never to be forgotten. The city was decorated with flags, festoons and flowers, and the whole populace animated with joy. The grand procession, which eclipsed all other processions ever gotten up in Memphis, was over two miles long, and took two hours to pass a given point.

The formal proceedings were opened with prayer by Rev. Mr. Daniels, followed by an address of welcome by Col. George Gantt, in part as follows:

A little less than twelve months ago, at this very season, the iron rusted in disuse on our great railways. Silence and emptiness waited at our wharves, and rank grass grew in our deserted streets. The iron key of quarantine locked in the few braves that remained; the rest, for the greater part, were scattered in distant communities, waiting with anxious hearts for the signal to return. The hum of industry, the whir of machinery, the voice of gladness—these were all hushed. In our courts silence and solitude rested. Our institutions of learning were voiceless and vacant. The houses of worship, the temples dedicated to Almighty God, stood closed in melancholy gloom. Only the medicine men and their nurses and the inevitable undertaker found employment. Only the groans of the sick, the despairing cries of the dying and the sound of the death cart broke the dismal silence of that awful time. But now how changed! Gladness claps her hands with joy, and "pleasure waves her pinions

wreathed with flowers." Commerce knocks at our doors for admission; activity and energy prevail in every branch of business and in every vocation, and we are actually taken by storm with this vast multitude of friends and guests.

Toward the Christmas holidays of 1878 this people stood face to face with 6,000 new-made graves, the death-harvest of the great epidemic of that year. Their treasury was empty. Corporate credit was dead. Their firemen and policemen were unpaid. Misrule and years of fraudulent practices had so enfeebled their local government that it was no longer able to answer the purposes of its creation. A multitude of hungry creditors used it as the means of imposing incalculable burdens on the unhappy people. Like Prometheus chained to the rock, it only grew to be devoured by these greedy creditors. The people rose up and threw it off, and upon its ruins established a new method of governing. For a city of 40,000 inhabitants to surrender its charter and corporate name was a startling proposition. But the situation was desperate, and the step was taken. From the old grooves and ruts came the cry of the croakers and discontented. Some derided, others abused. Many misunderstood and misjudged. From the first the new method of governing encountered fierce opposition. It was challenged in the courts. It came forth stronger from that ordeal. The pestilential wave of 1879 struck it. Then came the long and fearful struggle of that year.

In this contest the old government would have instantly succumbed. But the new possessed powers of resistance, and a self-sustaining capacity that fitted it as well for smooth and prosperous times as for the Black Fridays in the calendar of human affairs. The whole country was filled with anxiety. The question on every lip and tongue was, Are the appalling scenes of 1878 to re-appear in 1879? It was of such magnitude as to arouse the deepest concern in the national government itself. The inexorable orders for depopulation and isolation came. To be closed in with the demon of pestilence, to fight it out until ice and frost came with relief, was the stern decree of those in authority. Well did the new government stand the terrible strain. No employee went unpaid, no function of government unperformed. Well did its plucky officers and devoted volunteer organizations who stood by, do their duty. Dr. D. T. Porter, the heroic head of the government, exhibited, in a high degree, the qualities that make the leader and the ruler. He was equal to every exigency—to face the pestilence, to quell the mob, to find the means of feeding the hungry, to animate and lead the people in those great undertakings that were necessary for their safety and redemption—in each and all of these roles he seemed at home. It was not until the beginning of the last fall month that the cloud lifted, and the absent thousands were permitted to return to their homes. They came back poor and dejected. They found a work imperatively demanded, of a magnitude and cost that might well have appalled a rich and prosperous people. The question that confronted them was whether this should be the abode of civilized man or be surrendered to the annual ravages of pestilence, and become the dwelling place of "beasts of prey and birds of evil omen"—a spot to be feared and shunned as "a city doomed to destruction by fire from heaven." Nor was this people

alone concerned in it. The great family of communities living up and down our mighty river were interested in the problem whether this was to be the seat of health and prosperity, or a nursing mother for mighty plagues and contagions which would make it a constant peril to their health and general welfare. Face to face with such an ism, it is not surprising that some looked for help from the general government, others from the State government, and not a few gave up all as lost. But the great bulk rallied around their leaders and declared their readiness to submit to any sacrifice. The legislature was convened in extra session, to pass such laws as might be deemed necessary to meet the grave emergency. In these steps we were fortunate in having an able, zealous, and efficient delegation in the legislature, and the sympathy and co-operation of a governor, conspicuous as well for the largeness of his heart as for the breadth of his intellect. As soon as the necessary legislation was procured the work was begun and pressed with extraordinary vigor. A new, and only partially tried, system of sewerage was adopted. Many feared that this was a blunder, but the result has more than justified the expectations of its most sanguine friends. We now have thirty-two miles of sewerage and drainage. In connection with these important works a large amount of auxiliary work has been done—the whole constituting a system which will prove an effectual safeguard against a recurrence of those distressing plagues that have scourged this locality. Nor have our efforts been directed alone to works of sanitation. New and substantial pavements and streets have been and are being constructed. Gigantic structures with storage capacity for 75,000 bales of cotton, and mammoth cotton compresses are being rapidly pushed to completion; our vacant houses are fast filling up; the demand for skilled and unskilled labor, for the first time in years, exceeds the supply. The flourishing condition of her newspaper press is a sure index of her improved condition. Recreated Memphis furnishes extraordinary inducements for enterprise and capital.

The recuperative powers of Memphis have almost passed into history. This wonderful rebound power has its spring in well-known causes. Chief among these is her geographical position. She is the centre of an extensive fertile country, the rich products of which, by force of natural laws, are brought to our doors. Located on the banks of the greatest river of the continent, upon an elevation high above the level of vast alluvial tracts of land that stretch away in all directions from her feet, her site is one of Nature's thrones, erected by the hand of the Almighty for a queen of commerce. She has supplemented these great natural advantages with those wonderful agencies of modern civilization, the railway and the telegraph. The former serves as an artery through which the blood of commerce moves to support and sustain her. With the latter she feels the throbbing pulse of commerce in its daily and hourly beat all around the globe. She is the axis about which a great trade revolves, but is not content with what she has. Her daring and sagacious merchants and business men are now busy with new railways, over short lines, straight to the very heart of the great cotton-fields, of which she is the geographical and natural centre. With these iron arms she will grapple the rich products of these fields to her bosom. Her people are alive to her

great opportunities and grand capabilities. They have faith in her destiny—do not doubt that a time and tide will come in her affairs which will carry her in triumph to the highest pitch of commercial prosperity and power. They are undismayed by disaster and trial. As it is the stormy sea that makes the great mariner, so the trials and privations to which this people have been subjected are but the stern and rude educators which have called out their reserve powers—the school of preparation which has fittted them for difficult undertakings and great achievements.

In our reformed methods of governing we act on the sound maxim, "pay as you go." Official life is a trust administered for the benefit of the people, and not for the enrichment and aggrandizement of the officeholder. Here life, liberty, and property are secure. No man is molested or made afraid in the pursuit of his business. An independent, enlightened judiciary, composed partly of Democrats and partly of Republicans, administers equal and exact justice to all—of every race, nationality and color. Under the force of public sentiment and an exceptionally able administration of the criminal law, disorder and violence are of very rare occurrence. No spot in the limits of our great Republic exhibits a more peaceful and orderly community than this. All this I assert in the presence of 3,000 witnesses. First, to still the absurd stories that we still have yellow fever; second, to repel the groundless and malicious charges that here disorder and violence "go unwhipt of justice;" third, to furnish a specimen brick of the much abused "solid South." We are for good and cheap government. We are solid for peace and order. We are solid for bigger crops and better prices. We are solid for the spread of learning; for more churches and school houses. We are solid for the improvement of our colored citizens, because we know that the more of them who are intelligent and thrifty, the fewer will get support by crime and begging. We are solid for the old flag, the constitution, with all its amendments.

In her good fortune Memphis will not forget the friends who stood by her in the winter of her discontent. She cherishes a lively sense of gratitude for the kind and encouraging words that have been written and spoken in her behalf. She can never forget her obligation for succor from the good and charitable everywhere, when she was stretched upon the "rude rock of rough affliction."

GOVERNOR MARKS said:

. . . . . One year ago Memphis was sitting in the shadow of pestilence; her commerce destroyed; her industries dead; her wealth decayed; her treasury empty; her credit gone; her streets impaired; her soil reeking with the noxious seeds of disease. The world, turning away with horror from the leprous city, said, "Memphis is dead." A man of God* standing in one of her pulpits and voicing the sentiment of her people, answering, said, "Memphis cannot die." Difficulty followed difficulty, and disaster mounted upon disaster, but the sublime faith of the people of Memphis in the future of their city rose high above all. There was no clamor for a removal. No Camillus was needed to inspire and direct them. With a confidence

* Rev. Dr. H. A. Jones.

as firm as a rock; with a brain to plan and a nerve to execute, the people of Memphis, as one man, sprang to the glorious work, and in less than one year Memphis was rebuilt. The shadow of pestilence has melted away; her commerce restored and expanding; her industries revived and increasing; her wealth regained and augmenting; her treasury full; her credit established; her streets paved and her soil purified. While one year ago the world turned away from Memphis as a foul, polluted, doomed city, now, with wonder and astonishment it salutes her as the first city of the world in enterprise and achievement. The prodigious results accomplished are generally ascribed to the forms and administration of the government of Memphis, but in truth these are simple results of the great underlying cause which rescued and restored Memphis. The real cause of her regeneration is to be found in the fact that her people, with one voice, one mind and one heart, resolved that Memphis should live and accomplish the full measure of her glorious promise. The success of her city government is the result not of its form, but its admirable administration. There is no city government that has so much ability and worth directing its administration as has the city of Memphis, and hence it unexampled success.

. . . . . Having absolute confidence in their government, the people of Memphis backed it with the strongest possible treasures—the pockets of a willing people. And whenever their government made a draft upon them, it was honored, whether there was a law to enforce it or not, and this enlightened, patriotic action of the people of Memphis, not only secured the accomplishment of the vast design projected, but it illustrated the truth of the fact that "pay as you go" is the first and essential principle of all honest and economical municipal government.

Dr. Luke Blackburn, Governor of Kentucky, thanked the assemblage and the city of Memphis for the kind invitation he had received to visit the city in her prosperity, and added:

. . . . . There were moments when the recollections of the past caused language to fail to give utterance to feelings. He had been in Memphis in time of death, and he had ever been anxious to be here when all was happiness. No man in Memphis had watched more closely the progress of the city than he had, and no man had kindlier feelings for Memphis than he. It was impossible to look into the future—but if affliction should fall upon him, he felt and knew that there was one city and one people in the land who would put out the hand of fellowship to him, and that city was Memphis. He recalled the names of Memphians now dead and gone, who stood by him in the days of 1873—the names of Wheeler, of Fisher, of Butler Anderson, and a host of others. His confidence in the progress of Memphis had never abated. In his State a man had said that he would give one thousand dollars to burn Memphis. Such a person was unworthy to be called a man, and he was deservedly denounced by the people of Kentucky, who, when danger appeared, would rush to the relief and protection of Memphis. The man who said this was a disgrace to humanity, and unfit to live. He [Blackburn] knew that Memphis would be redeemed.

. . . . . In 1873, when the yellow-fever scourge raged in Memphis, the North responded to the calls for help with money and other assistance, showing that we were one people. This was right. We should stand and struggle together. He desired to speak of the ladies of Memphis. In 1873 he saw them by the bedsides of the sick, smoothing the pillows of the dying, and he never saw such devotion. Men stood at their posts day and night, ready to fall in the path of duty, but woman was no less heroic. He had seen men desert their loved ones, but he had never seen a mother desert her child, or a wife her husband during the epidemic. Woman was first at the couch of the sick and first at the grave of the dead. What would the world be without her? The women of the South, during the terrible war, passed through the crucible for four years with a devotion and heroism that the Spartan women never exhibited. The gentlemen of the South should prize their ladies, and they have the reputation, at home and abroad, of being gallant to them upon all occasions. He could talk forever to the people of Memphis, but he advised them to keep up a quarantine when danger appeared at the gulf ports. He felt as if he belonged to Memphis, and so long as he lived the present occasion would be green in his memory, because he loved the Memphis people as he did the people ef Kentucky.

Homœopathy in the United States.—From the report of the Bureau of Statistics made to the American Institute of Homœopathy the present year, it appears there are 6,000 homœopathic physicians registered in the United States. There are 23 State societies, of which 17 are incorporated by their respective States. There are 92 local or county societies and 7 clubs, partly professional and partly social: Of the 38 homœopathic hospitals in this country, 30 report 1,682 beds, which provided, in the last year, for 14,959 patients, with a mortality of 367—about 2½ per cent. The cost of building 25 of these hospitals has been $1,549,175, and they are mostly supported by contributions and paying patients. Of the 29 homœopathic dispensaries, 25 report having treated, in the last year, 117,564 patients, with 272,772 prescriptions, at a cost of $10,639.19, or about 4 cents for each prescription. Eleven homœopathic medical colleges are established, and instructed, last year, 1,192 students, of whom 387 were graduated. The total number of graduates from these colleges is 4,922. The cost of establishing 5 of these colleges has been $230,000; the cost of the others is not given. There are 16 homœopathic journals published in this country, quarterly, monthly, and semi-monthly, with an annual total of 8,784 pages, and an aggregate of 23,450 copies. In addition there are national medical societies, medical schools for special subjects, a publication society, and a very prosperous life insurance company, called the New York Homœopathic Mutual.

MENU.

Meat Bread.—M. Scheurer-Kestner has discovered the remarkable fact that the fermentation of bread causes the complete digestion of meat. He found that a beefsteak cut into four pieces, and mixed with flour and yeast, disappeared entirely during the process of fermentation, its nutritive principles becoming incorporated with the bread. The meat would also appear capable of preservation for an indefinite period in its new state; for loaves of meat-bread, made in 1873, have been submitted to the French Academy of Sciences, where not a trace of worms or mouldiness was observable. At the beginning of his experiments, M. Scheurer-Kestner used raw meat, three parts of which, finely minced, he mixed with five parts of flour and the same quantity of yeast. Sufficient water was added to make the dough, which in due time began to ferment. After two or three hours the meat had disappeared, and the bread was baked in the ordinary manner. Thus prepared, the meat bread had a disagreeable, sour taste, which was avoided by cooking the meat for an hour with sufficient water to afterwards moisten the flour. The meat must be carefully deprived of fat, and only have sufficient salt to bring out the flavor, as salt, by absorbing moisture from the air, would tend to spoil the bread. A part of the beef may be replaced with advantage by salt lard, which is found to improve the flavor. The proportion of meat to flour should not exceed one-half, so as to insure complete digestion. Bread made with a suitable proportion of veal is said to furnish excellent soup for the sick and wounded.—*Sanitary Record.*

Fish.—Fresh water fish are seldom boiled; but a pike thus cooked, with horse-radish sauce and mustard, is an excellent dish; and perch, with sorrel sauce or mayonnaise, is equally good. In boiling fish the whole secret consists in never letting the boil assume a state of turbulence, but to keep it in a gentle, equable temperature until the fish is done, otherwise the skin will be split, the outer portions overdone, and the fish next to the bone utterly raw. In the cooking of fish the removal of the scales is too often considered a very unimportant part of the preparation; but to break the skin of some fish is to ensure its being totally spoiled in the after-cooking. No sharp instrument should be used. A coarse towel is sometimes enough, or a paper knife; or, with the perch family, the thumb-nail forced from tail to head, the scales being previously loosened by the tail being fastened by a fork to the dresser and the head pulled.—*The Caterer.*

Cooking Mackerel.—The following is an excellent method: Procure a good sized mackerel, clean and dry it well; butter some white paper thoroughly, double it, put the mackerel in this double paper and fold it over on the top of the fish in a wide pleat, then twist and fold the ends of the paper underneath, so as to exclude cold air and keep the hot air in. Bake the fish in a hot oven for twenty minutes, then take it up, but do not unfold the paper; lay another piece of paper on a very hot dish, place the mackerel, still in its paper, on the dish, fold a napkin round; the instant before sending to table cut with scissors the paper off the top of the fish, but leaving it in the cradle that contains the gravy, which can be scooped up with a spoon.—*The Caterer.*

"Hecker's Perfect Baking Powder," recently introduced, will be welcome to all housekeepers, as the everywhere recognized reputation of Messrs. Hecker & Co. is a sure guaranty of the purity and excellence of whatever they put upon the market. And their Baking Powder will doubtless soon be as extensively used as their celebrated Farina and Self-Raising Flour.

Griddle Cakes.—As soon as the griddle is ready for baking, mix with *cold* water or milk as much of Hecker's Self-Raising Griddle Cake Flour as you need for the occasion; add the water or milk gradually, mixing until the batter becomes smooth. The batter should be a little stiffer than that made with yeast. Bake immediately.

Rose Sauce.—This is an excellent sauce for puddings, and one that looks very pretty. Peel and slice a fine large beet; boil it gently for twenty minutes in a pint and a half of water. Then add two pounds and a half loaf sugar, the thin rind and strained juice of a lemon and a half stick of vanilla. Boil quickly and skim constantly until the liquid becomes a rich, thick syrup, of a deep red color; then strain. When nearly cold stir in a gill of brandy, and when quite cold bottle and cork it closely. It will keep any length of time if properly made.

Gingerbread.

Breathes there a man with soul so dead
He loves not new-baked gingerbread?
Who, stepping through the kitchen door,
On baking-day sees goodly store
Of fragrant, umber-shadowed cake,
And—half unconscious—does not break
A ragged chunk? Ah! toothsome bliss!
He is a churl who knows not this.
For him no practiced dexter wrist
Shall limp incipient doughnuts twist,
Or stir, to coax his gourmand taste,
Dreamy meringue and flaky paste.
Though he may live on Nob Hill's tip
And hold his gold with miser's grip;
Though he may own the whole long list
Of vintner's hoard by cobwebs kissed;
May dine from Sevres, drive a "cart,"
And sit on "decorative art";
Despite his gastronomic books,
Despite his white-capped Gallic cooks,
The wretch, concentred in his pride,
Shall live and eat—unsatisfied.
And when kind Providence, or gout,
Shall snuff his farthing rushlight out,
The stern Recorder of the skies
Against the tombstone's gilded lies
(Counting the virtues of the dead)
Shall write: "He loved not gingerbread!"

—*Independent.*

Editor's Table.

State Medicine in Massachusetts.—First Annual Report of the State Board of Health, Lunacy and Charity, 1879, two volumes.

The first volume, pp. XCIV–175, presents a cursory view of this new organization, into which the State Boards of Health and Charities were merged last year, covering the first three months only of the official existence of the consolidated Board: sets forth the plan of work, and suggests questions in relation to the Public Hygiene and the Charities of the Commonwealth, instead of making settled recommendations, which require more careful investigation and mature consideration. Primarily, however, the Board divided the work into four departments, corresponding to the several classes of subjects committed to its jurisdiction: Health, Lunacy, Charities and Finances.

Part 1 summarizes the special reports and papers relative to public health which constitute the second volume, (Supplement containing the Reports and Papers on Public Health), published subsequently. Noxious and Offensive Trades are briefly discussed, as having engaged the attention of the former Board of Health in the early part of the summer; but the few cases which came under the advice of the Board having been satisfactorily settled, the subject was not further pursued.

Part 2 emphasizes the evidence of a continued annual increase of insanity; but raises a question whether it is real or only apparent—whether of actual new cases, or of patients who have passed into the chronic stage of the disease; the leading evidence is said to indicate the latter condition, requiring an annual increase of State accommodations. The aggregate reports show that from 900 to 1,200 are admitted into the lunatic hospitals every year, but some of them for a second or third time, and many of them having received treatment for a long time in other establishments. The number of insane persons in the State is estimated at about 5,000, or one in about every 330 of the population, and the average annual cost of each one, $200.

Part 3 is subdivided into Indoor and Out-door Departments, under respective superintendents, and these two departments, respectively, into four sub-departments, comprehending (1) Immigration; (2) Settlement of Paupers; (3) Transportation, and (4) Visitation. The number of paupers wholly and partially supported during the year aggregates 86,870, or one in about every 19 of the population of the State.

Part 4 consists of summaries and tabulated statements of all the

expenses, appropriations and deficiencies for the year under the several heads.

The Supplementary Volume, pp. XXIV.–277, treats exclusively of Part 1—the Health Department. It opens with a general report of seventeen pages' length, introductory to *twelve* stated papers, as follows:

(1) The Pollution of Streams; (2) Observations on Fresh Pond, and (3) Examination of Mystic Water, with Remarks on Frankland's Method of Water Analysis, by Wm. Ripley Nichols, Prof. of Chemistry, Massachusetts Institute of Technology; (4) Trichinæ in Relation to the Public Health, by F. S. Billings, M.V. (Royal. Vet. Inst., Berlin), of Roxbury, Mass.; (5) Adulteration of Some Staple Groceries, by Ellen H. Richards, Instructor in Chemistry, Woman's Laboratory, Mass., Institute of Technology; (6) Water Supply of Cambridge, by Edward S. Wood, M.D., Prof. of Chemistry, Harvard Med. School; (7) Algæ Observed in Storage Basin, No. 3, of Boston Water Supply, 1879, by A. Eteley, C.E., Resident Engineer Boston Water Works; (8) Some Impurities of Drinking Water, Caused by Vegetable Growths, by Prof. W. G. Farlow, M.D., Harvard University; (9) Effect on Health of Certain Algæ in the Mystic Water Supply: Medical Correspondence; (10) Drainage of Summer Hotels and Country Boarding-Houses, by E. W. Bowditch, Engineer; (11) Suggestions on Sewerage, by E. C. Clarke, C.E., Principal Assistant Engineer in Charge of Improved Sewerage, Boston; (12) Health of Towns: Typhoid Fever in Five Towns of Middlesex County, by Dr. S. W. Abbott; Typhoid Fever in Brookline, by Drs. R. Amory and G. K. Sabine; Typhoid Fever, Diphtheria, Scarlet Fever.

The subjects of these papers are eminently suggestive of their importance, and the more when taken in connection with the density of population. Prof. Nichols' first paper is a continuation of the investigations begun by Mr. J. P. Kirkwood, under the direction of the Board in 1875, comprehends 529.58 square miles of water-shed, and a population of over 30,000. Two of the largest towns in ten are Westfield and West Springfield, together comprehending nearly half of the total population, have pure and abundant water supplies from storage basins, built by damming pure streams. Scattered over the area there are eighteen mills and factories—paper mills, tanneries, cloth mills, dress goods and cotton mills—employing 1,130 operatives, discharging all their drainage and sewage into the rivulets and soil from which the other half, or more than 15,000 people, obtain their water supply by means of wells and springs. Comparing the results of two periods of examination of Merrimac River water by the same reporter, 1873 and 1879, the amount of chlorine found in

1879 was from two to three times greater than in 1873. The difference in the amounts of ammonia and albuminoid at the different places and times admit of no positive deductions. Professor Nichols' second paper is a contribution to knowledge on stored surface waters. Fresh pond covers an area of some 200 acres, and serves as the source of Cambridge water supply, and is partly within the city limits. The pond is fed mainly by the ground water or by actual springs. The water for examination was taken from two, twenty and thirty-five feet below the surface. The number of examinations and results are tabulated, and illustrated by a diagram. The determination of the total dissolved solids shows that, with a few exceptions noticed during the summer months, the water taken at the same time from the three depths does not show differences greater than the allowable error of analysis. The differences in temperature at different depths and in different portions of the pond were inconsiderable—accounted for by the various causes which produce circulation. His third paper is with the object of obtaining a wider experience in the examination of New England waters, as tested by the use of Frankland's method of analysis, hitherto but seldom used in this country. He concludes that "while as a chemical method that of Frankland is superior to that of Wauklyn, and while it is more satisfactory in following out the changes of surface waters, as a rule—for practical purposes—the Wauklyn method suffices, provided the results are interpreted with a proper knowledge of the history of the water under examination; and Frankland's method does not dispense with the necessity for such knowledge. The paper on *Trichinæ* is chiefly limited to the natural history of the parasite and the literature of trichinosis, with a concluding page suggesting the employment of competent inspectors of pork and bacon, knacker establishments, all places where swine are kept and slaughtered; and the protection of all piggeries and slaughter-houses from the contents of cesspools, house-sinks and sewage.

Mrs. Richards' paper on the Adulterations of Some Staple Groceries shows a gratifying result. Of 25 samples of flour and 75 of sugar there were no adulterants whatever discovered; one sample of sugar only indicated glucose in a faint degree.

Of soda, the so-called "saleratus, bicarbonate, or super-carbonate, cooking-soda," all being names for one and the same thing, 93 samples were examined: 19 were nearly chemically pure, 43 were good, 25 contained from three to sixteen per cent. of chloride and sulphate of sodium, but of these 25, three only were bad. Alum was not found in a single sample. 7 packages were found without the name of the manufacturer, only the names of the mills being given. Every one

of these was adulterated: one was largely flour, the other six contained over fifty per cent. of terra-alba. One other package had the maker's name, but no place of business on the label, and contained eighty-one per cent. of terra-alba. Two packages were labeled simply "Horsford's Cream of Tartar," and consisted of acid phosphate of lime.

Of baking-powders, 33 samples were tested: 24 were good, containing nothing injurious; some of them contained an excess of starch or flour. Of the remaining nine, eight contained alum, and five of these last also contained ammonia.

The Cambridge Water-supply is shown to possess several sources of dangerous pollution—tributary streamlets which are the habitual receptacles of barn-yard, pig-sty and privy-vault sipage. Analytical tables of comparison are appended, showing the average composition of (impure) waters with which fresh pond water may properly be compared, and the conclusions drawn that the supply is both insufficient and impure, and that some other additional supply should be obtained. Of algæ in a water-supply, nothing new is suggested.

Of impurities of drinking-water, caused by vegetable growths, suggests the Nostoc family of plants as the most common cause of the disagreeable odor sometimes present in water-supplies, and possibly a source of unwholesomeness, but in no respect to be confounded with the supposable dangers of bacteria or water "germs," with which it has no relation whatever. Equally unsatisfactory is the Medical Correspondence on the Effect on Health of Certain Algæ in the Mystic Water-supply: there is no evidence of injury from this cause.

The paper on Drainage of Summer Hotels and Country Boarding-Houses is a description of 150 country houses, including hotels, boarding-houses and private dwellings, of supposably sensible and decent people, but these houses—as such houses generally are throughout the country—were found to be the ornamental centres of foul and dangerous emanations. Their general character is best shown by specimens:

No. 19. Private residence, Edgerton Village. Privy 9 feet, sink 20 feet, barn cellar 70 feet from well.

No. 27. Sickness in the house. Cesspool consists of a starch-box, with the bottom knocked out, two feet and a half from the well; swill barrel 15 feet, surface privy less than 20, row of privies within 15 feet.

No. 28. A case of typhoid fever. The neighbors state that every precaution for good health has been taken. Cesspools exceedingly foul; the nearest is within one foot and four inches of the well, and three within less than 20 feet.

No. 43. A boarding-house, accommodating 20 guests. Bath-room, water-closet, set basins in chambers and on ground floor. Sewer-air was noticeable in the front hall. Peppermint introduced into one of the set basins comes out strongly, after the lapse of a few minutes, through *all the other set basins in the house.* The average length of untrapped lead waste from each basin was *forty-nine feet!* It is the habit to pour chamber slops through the basins. . . A portion of the water-closet sewage runs out on the back side of the plastering every time the closet is used. The proprietor states that he has mended the roof of the L several times, but it still leaks, he thinks in some way around the tin flashing! The sewage all runs to a leaching cesspool outside the house.

No. 45. A popular summer hotel, accommodating 150 people. All sinks, privies, water-closets and urinals are in the L, separated from the house proper. On the third story are three long hopper-closets, delivering into four inch cast-iron pipes; also a stop-hopper running to the water-closet trap. *Soil-pipe delivers into privy-vault on second story.* On the second story underneath, and a little to the rear of the closets on the third story is a set of four privies. Vault runs up two stories; a ten-inch ventilating pipe of tin connects the top of the vault with the kitchen chimney. On first story are four pan water-closets, delivering also into privy vault mentioned above. Three urinals deliver (with open joint) into a four-inch cast-iron trap, which, in turn, empties into vault. Vault presumed to be tight. Overflow from vault to tight cesspool, which in turn overflows. . . The material, as nearly as can be described, is galvanized iron stove funneling slip joints, made tight (?) with a daubing of lime-mortar. As a fact, none of them are tight. The delivery is eventually into a square wooden box-drain through a cast-iron S-trap, and the material all runs to mean water. Peppermint put into the hopper closets seemed to diffuse itself all over that portion of the house in a very short time.

The above selections are not of the worst, but a fair average of the whole.

Mr. Clarke's Suggestions on Sewerage present nothing new, but a good summary of well-established conditions, essential for an efficient sewerage system.

Health of Towns is a companion piece to the Drainage of Summer Hotels and Country Boarding-houses. Privy, sink and well, in such relation as to admit of the commingling of their respective contents, being the common factors of typhoid fever. This paper contains examples with diagrams illustrating such proximity of these appendages to some country houses, as lead to the inference that they might be used in common for any of the several purposes for which they are intended, with but little or no change in the qualities of their contents, or their effects on the human system. And the wonder is not that so many die of typhoid fever and other filth diseases, with such surroundings, but that any live.

In the institution of measures for the protection of human life, the

first step consists in exposing the danger. Systematic State measures of this kind were first begun in the United States by Massachusetts, eleven years ago. And that she now stands at the head of State Medicine in this country is because she has made bold strokes in exposing dangers to her own people. But Massachusetts has by no means rested after the first step. Step by step as she has exposed the dangers, she has advanced in overcoming them. And if those who would indulge in exclamation at the startling exposure of country-houses in Massachusetts, made in this report, would make haste to engage their senses with their own homes, as some other communities have done, they might profit by the example.

On the resignation of Dr. Bowditch from the Board and the Chairmanship of the Health Department, previously noticed, he was succeeded by David L. Webster, Esq., of Boston, and by Dr. Robert T. Davis, of Fall River, as Chairman of the Health Department.

Dr. Henry P. Walcott, of Cambridge, has been appointed Health Officer of the State Board.

Louisiana State Board of Health.—In October number we were constrained by the evidence before us to refer to the acts of this Board in New Orleans as obstructing commerce. Before our remarks had got into the mail "a suspicious sickness" was announced through the public press as prevailing at that time in the neighborhood of the New Orleans quarantine station. This, on examination by the authority of a resident physician and Dr. G. M. Sternberg, U. S. Army, an Inspector of the National Board of Health, was pronounced yellow fever.

At the time of this writing, (October 12th) we have information of two deaths from yellow fever in New Orleans, September 5th and October 4th, recent Memphis papers, the October number of *The New Orleans Medical and Surgical Journal* and the National Board of Health *Bulletin*, of October 9th, containing the majority and minority reports on the fever above referred to, in the vicinity of the quarantine station, which fully account for the discord between the National and the State Board of Health.

It appears that on Dr. Sternberg's report, under date of September 10th, at the instance of Dr. Bemis, the National Board offered to place at the disposal of the Louisiana State Board of Health from five to ten thousand dollars for use in the necessary preventive measures. This offer was rejected by the State Board. And shortly the public prints announced that "Dr. Joseph Jones, President of the State Board of Health, denies that the disease is anything more than malarial fever caused by exposure in the rice fields." A few days thereafter, the following appeared in the newspapers :

NEW ORLEANS, Sept. 23, 1880.

The State Board of Health to-night adopted resolutions that, in view of the fact that representatives of the National Board of Health have on several occasions during the past extraordinarily healthy summer deliberately attempted, through the agency of their employees, to create a yellow fever panic against this city, the National Board of Health be requested to instruct its representatives in Louisiana to confine their movements to the limits prescribed by acts of Congress, and prevent them interfering in any way with the duties of the State Board of Health; that the press of the United States be earnestly requested not to attach credence to any report in relation to the public health of this city or State which has not the official sanction of this Board, and pledging through its President to keep the public thoroughly and truthfully informed as to the condition of the health of New Orleans and the surrounding country.

The correctness of Dr. Sternberg's report, under date of September 10th, having been called in question by the State Board of Health, Dr. Bemis, acting in his capacity as a member of the National Board of Health, determined

"In the interests of science as well as the paramount interests of public health, to order a new investigation. To this end, he requested Dr. J. Dickson Bruns and Dr. J. P. Davidson to unite themselves with Dr. Sternberg in a second visit to the seat of prevalence of the fever, and after due investigation to make a further report. The result has been two reports; one signed by Dr. Bruns and Dr. Davidson, and the other by Dr. Sternberg alone.

"The gentlemen signing the majority report are two of the most accomplished and experienced physicians in the city of New Orleans. Dr. Sternberg's reputation in the scientific world is sufficiently well known to require no notice at our hands.

"In the action above set forth, the writer (Dr. Bemis) was seconded and assisted by his colleague on the National Board of Health, Dr. R. W. Mitchell, who also accompanied the commission, but without participation in their discussions or reports. It is also proper to say that the writer (Dr. Bemis) adopted the majority report as his rule of conduct, but by this action did not presume to adjudicate the question at issue from a scientific standpoint."—*New Orleans Medical and Surgical Journal.*

Drs. Bruns and Davidson pronounce the disease a *remittent fever*, such as "all the practitioners in the infected district . . . are accustomed to treat every summer." Dr. Sternberg, in a minority report, holds to the opinion expressed on his first examination, and adds: "From a consideration of all the cases seen by me during my two visits, and of the facts relating to the origin and progress of the epidemic, I cannot doubt that this fever is the mild type of yellow fever which has been described under various synonyms, which Blair more properly calls 'yellow fever *simplex*,' to distinguish it from the more malignant type called by him '*gravior*.'"

In the *Bulletin*, of October 9th, Drs. Bemis and Mitchell, of the National Board, in summing up the whole matter,

"Place themselves on record as fully accepting and endorsing Surgeon Sternberg's conclusions, to wit :

1. That yellow fever (about 100 cases) existed between August 1st and September 10th in Plaquemine Parish, Louisiana.
2. That the outbreak had its origin in the immediate vicinity of the Mississippi River quarantine station, the first case, August 1st, occurring directly opposite the point where the infected bark *Excelsior* was detained from July 11th to August 16th.
3. That while the type of the disease was generally mild, vicious local conditions existed, which aggravated it into the most fatal form, four dying in one family out of five attacked."

By which the conclusion is certainly justifiable that both reports and all the evidence obtainable agree as to the existence of a grave form of *endemic* disease, at least, if not epidemic, in the vicinity of New Orleans, and surely all the worse if "every summer," without any apparent effort on the part of the State Board of Health to stay its progress; and only a difference of opinion between the competent observers in regard to its essential nature. How far such inquiries and efforts for the protection of the public health by the National Board can or ought to be regarded as out of its domain, or as being in any respect an interference with the duties of the State Board of Health is beyond our comprehension.

New Haven.—The Seventh Annual Report of the Board of Health, for 1879, is a singularly satisfactory document. The happy, but at the same time pungent, facility with which Professor Brewer, the President of the Board, expresses himself on subjects of general sanitary interest, is sufficient reason for publishing his excellent letter to the Common Council almost entire, on other pages. By the report of the Health Officer, Dr. C. A. Linsley, the city has been "wholly exempt from every form of epidemic of a fatal kind," and therefore showing the best evidences of a good sanitary condition—the absence of zymotic diseases. The absence in this case, however, has been only relative—a smaller number of deaths from this class than usual, but still quite sufficient to signify material to work upon, and to the necessity of which work the Health Officer, as the President, is fully alive.

Total mortality from all causes, 1,004; 75 less than on the previous year. From zymotic diseases: diarrhœa, 42; diphtheria, 30; membranous croup, 18; typhoid fever, 16; whooping-cough, 13; typho-malarial, malarial, intermittent, and remittent fevers, 22; measles, 7; erysipelas, 5; scarlet fever, 3; cerebro-spinal meningitis, 2: 158—one in about every six and a-half deaths from all causes; a comparatively small proportion, but large enough to be significant of a good deal of

filth left yet, and, as pointed out by the Health Officer, some recently stowed by the town authorities, under and in close proximity to the alms-house, as admirably well calculated as if designed to kill off the inmates.

It is a great pity that the fixing of such responsibility for constructive murder has no legal punishment attached to it, as by which the sensibilities of town authorities in general could be touched.

Of the whole 1,004 deaths, consumption killed 161, and other diseases of the respiratory system, 117. Not less than one-half of these, in their amenability to preventable causes, may be safely classed with zymotic diseases, making the number of preventable deaths for the year from these two classes about 300, or one in every 3.35 of the total number from all causes.

Births reported for the year, inclusive of 65 still-births, 1,973. Marriages, 498.

The report is concise and cogent throughout, showing practical familiarity with sanitary work.

Kitchen Garbage Disposal.—To the Editor of the Sanitarian: My short letter on the garbage question in September number has directed attention to at least one subject—that of burning up the refuse matter of the kitchen on the premises. Men of intelligence, householders and housekeepers, ask how it can be done without the fumes or gases getting into the house? I answer, very easily. First, as to the manner or modus operandi: The burning of coal fires in ranges and in cooking-stoves constantly gives off gases more volatile, more penetrating and more poisonous and deleterious than the gases from the burning of the refuse kitchen matter, such as potato peelings, turnip tops, and other trimmings, when thrown into the fire, when these substances are fresh; and so also of the scraps of meat, bones, etc., after dinner, if thrown into the fire. Now, if the gases that are generated constantly by the burning of coal fires in ranges and stoves are all carried off harmless and unperceived, as they are by the chimney, the less penetrating and less powerful gases from the burning of the kitchen refuse will be carried off harmless and unperceived.

This is about all the philosophy there is about it, and it is a perfectly simple process; any man or family can try it and *do it*. As to this material being of any value or any use to anybody, as some say it is, and ought to be saved, it is quite a mistake; it is of no sort of value or use to anybody who has not a pig-pen near his house to throw it into whilst it is fresh; to attempt to save it in cities or large villages is penny-wise and pound-foolish. It costs more than it comes to, for it cannot be kept any time without undergoing decomposition and becoming putrid and filthy, and it is this *vile leaven* that poisons the streets and fills the air with pestilence, supplying the pabulum of diphtheria and fevers the most malignant and deadly, not only in the streets, but in the house, and whole hecatombs of children are slain by the unseen foe that enters our dwellings in the filthy garbage box. The boxes, or receptacles of this vile stuff, cannot be kept

clean; they are a nuisance in or about the house or on the premises. In a few cases in cities where large hotels have a farm near by, the material can be carted off before it becomes putrid, and used in the hog-pens. Very few know the importance of keeping our dwellings free from all decaying matter. Cleanliness is next to godliness; pure air and pure water, the first essentials for life, are the gifts of our Creator, and when they come from His hand they are pure and undefiled.

E. F. PECK, M.D.

Brooklyn, Oct. 6th, 1880.

Potash Soap.—A correspondent whose attention has been attracted to our remarks on the bad qualities of a sample of castile soap in a recent number, refers to an article in the THE SANITARIAN, several years ago (Vol. 4), by Dr. Bulkley, the distinguished dermatologist of New York, and inquires whether soda soaps are not usually more irritating to the skin and less detergent than potash soaps.

He quotes Dr. Bulkley as stating that "potash is less irritating to the skin than soda, therefore soaps properly made with this are of most value medicinally, although the healing virtues of 'old castile' (especially white, a soda soap) are well known." In the same article Dr. Bulkley refers to *sapo viridis,* a German potash soap, which Hebra has made famous for the treatment of skin diseases. But he also refers to certain specimens of soap which, when submitted to microscopic examination, were found to contain *puscells,* and others which contained minute spiculæ of bone and *fragments of animal connective tissue*—examinations which were brought about in consequence of recurring or persistent eruptions on the skin under the use of particular kinds of soap. And he expresses the firm belief that many cases of skin diseases are thus originated, and many more kept up indefinitely by the use of soaps manufactured out of impure, decomposing animal fats, by which it clearly appears that the irritations, and even poisonous qualities of some soaps, are not due to the kind of alkali used, if well rendered, but to the impure, filthy and putrid fats which some manufacturers are in the habit of using, and to an excess of alkali.

The only way to avoid such results in the toilet, the laundry or the hospital, is to procure the soap of manufacturers who are known to use pure material only, who have no dealings with "soap-fat" men or use any of their "stuff," who, like Mr. C. S. Higgins, whose soaps we have been describing in previous numbers, use no impure stock whatever.

The Sanitary Protective Association of Newport offers the following competitive prizes for excellence in cleanliness:

First. A prize of fifty dollars to the person, not the owner of the house occupied, who shall put his or her premises in the most satisfactory condition by January 1st, next, and keep them so until the first of June.

Second. A prize of fifty dollars to the house-owner who shall do the most between September 1st, 1880, and June 1st, 1881, towards improving the sanitary condition of any occupied dwelling.

Attention is to be given especially to ventilation of the house, dryness of the cellar, the water-supply, condition of cesspool or drains and of the exterior premises, including outbuildings.

Advice as to the best means of effecting the conditions required will be cheerfully and gratuitously given, upon application to the Corresponding Secretary, Dr. H. R. Storer, at 39 Washington Street.

Competitors will send their names to the Secretary; for the first class, before January 1st, 1881, and for the second class before the first of June. E. M. STEDMAN, *U. S. N., Secretary, Pelham Street.*

Flowers and Vines add a refinement of their own to every home; and there is no gorgeous upholstering, no rare draperies of velvet and laces that can equal them in the adornment of our apartments.

The young lady who has once acquired a taste for dressing her parlors and windows with flowers, autumn leaves, ferns and mosses, will never want for the upholsterer's art in this direction, for she will far excel it. In spring time and summer, instead of curtains falling from gilded mouldings, she will have tasteful brackets and ornamental flower pots, from which hang clustering branches of tradescantia and moneyworth, while tall, shapely fuchsias lift their flowery heads from among bright-hued geraniums, artistically arranged in beautiful contrast with their graceful bells, in perfect loveliness. On the window-sills or tables hard by, stand pots of fragrant heliotropes, sweet tea-roses and other similar articles of virtu; and if there be room between, hanging baskets with various kinds of oxalis and other flowing tendrils enliven the whole with fragrance and beauty. And, as summer advances, dark-veined ivy leaves entwine about the walls and pictures, and, anon, artistically arranged autumn leaves, ferns and mosses perpetuate the scene with variations adaptable to all the seasons.

Mortality Statistics.—In compliance with many friendly requests, we resume in this number our statistical table of deaths from preventable diseases, which we suspended after June issue until the present, on the suggestion that such of the readers of THE SANITARIAN as were particularly interested in mortality statistics probably also received the National Board of Health Bulletin. Such, however, proves not to be the case to the extent contemplated. In resuming, the registrations are given for one week only, the latest received at the time of going to press. It is our purpose hereafter to keep up consecutive computation, monthly.

Mortality Statistics in the United States, with rates per 1,000 annually, from all causes, and from special causes which are usually preventable—for the week ending September 25, 1880.

States and Cities.	Population.	Deaths under 5 years.	Total No. of Deaths.	Annual rate per 1,000.	Consumption.	Lung Diseases, acute.	Croup and Diphtheria.	Diarrhœal Diseases.	Typhoid & Typhus Fevers.	Malarial Fevers.	Scarlet Fever.	Yellow Fever.	Measles.	Puerperal Diseases.	Small-pox.	Whooping Cough.	Accidents.
Me...Portland	34,000	4	13	19.9	2	..	2	4	..	..	..	..	..	..	..	..	..
N. H.Concord	14,000	2	3	11.1	..	..	..	1	..	..	..	..	..	..	..	..	..
Vt....Burlington	16,500	2	4	12.6	..	..	..	1	..	..	..	..	..	..	..	1	..
Mass.Boston	375,000	78	167	23.2	30	7	12	38	4	..	..	..	..	1	..	2	3
Cambridge	59,800	4	21	19.1	7	2	1	3	1	..	..	..	..	..	..	..	..
New Bedford	27,268	3	10	19.1	1	..	..	1	..	..	..	..	..	1	..	..	1
Newburyport	13,800	3	10	37.1	1	..	..	1	..	..	1	..	..	..	..	..	..
Fall River	49,000	16	26	27.7	3	2	1	1	..	..	..	..	..	..	..	..	..
Lowell	59,340	13	28	22.9	5	1	..	5	2	..	..	..	1	..	..	1	..
Lawrence	39,000	5	8	10.7	2	1	..	2	..	..	..	..	..	..	..	..	..
Worcester	58,000	9	31	27.7	3	..	1	1	..	..	..	..	..	..	..	..	..
Lynn	38,400	4	14	19 1	2	..	3	2	..	..	..	..	..	..	..	..	..
Somerville	25,000	3	8	16.7	1	..	..	..	..	..	..	..	..	1	..	..	1
Springfield	33,000	5	12	19.0	..	..	2	..	..	..	..	..	..	..	..	..	..
R. I..Providence	104,862	13	33	16.4	10	1	2	3	1	..	1	..	..	..	..	1	1
Conn.New Haven	63,000	3	14	11.4	3	..	1	1	1	1	..	..	..	..	..	..	1
Waterbury	20,300	2	7	17.9	1	..	..	1	..	..	..	..	..	..	..	..	..
N. Y.New York	1,203,823	267	571	24.7	83	57	44	82	7	16	3	..	4	6	2	6	29
Brooklyn	564,448	112	239	22.1	41	18	39	26	3	9	5	..	..	2	1	2	9
Yonkers	19,000	..	3	8.2	..	..	..	..	..	..	..	..	..	..	..	..	..
Poughkeepsie	21,200	2	5	13.0	..	..	..	..	..	..	..	..	..	..	..	..	..
Newburg	18,043	3	9	26.1	1	..	1	1	..	..	..	..	..	..	..	..	1
Utica	34,000	4	11	16 9	3	1	..	2	..	1	..	..	..	..	..	..	..
Rochester	90,000	10	24	13.9	..	1	1	4	1	..	..	..	..	..	..	..	2
Buffalo	155,159	26	60	20.1	7	..	8	8	3	..	1	..	..	1	..	..	2
Watertown	10,666	1	2	9.8	..	..	..	..	..	1	..	..	..	..	..	..	..
N. J..Hudson Co	209,000	32	93	23.2	12	3	3	3	4	1	2	..	..	12	..	..	5
Newark	137,000	16	42	16.0	3	1	2	5	2	1	..	..	..	..	..	..	..
Camden	41,714	4	9	11.3	..	..	..	..	..	..	..	..	..	..	..	..	..
Pa....Philadelphia	850,000	94	273	16.7	44	13	12	16	4	..	5	..	1	7	1	..	..
Pittsburgh	156,649	28	56	18.4	2	4	14	3	3	1	2	..	1	..	..	2	4
Erie	28,565	2	7	13.0	1	..	3	..	..	..	..	..	..	..	..	..	..
Del...Wilmington	44,000	6	16	18.9	3	..	..	..	1	1	..	..	..	..	..	..	..
Md...Baltimore	393,796	47	143	19.0	31	3	7	9	4	5	7	..	1	2	..	4	5
District of Columbia	180,000	36	78	22.5	8	6	6	4	2	10	..	..	..	..	..	..	1
Va...Norfolk	27,200	4	11	21.3	2	..	..	2	..	1	..	..	..	..	..	..	..
Lynchburg	16,400	3	7	22.0	..	1	..	..	..	..	..	..	..	..	..	..	..
N. C..Wilmington	17,600	1	9	26.7	..	..	1	..	..	..	..	..	..	1	..	..	..
S. C..Charleston	57,000	11	26	23.7	5	2	..	..	1	1	..	..	..	..	..	..	..
Ga...Augusta	27,012	1	9	17.4	1	1	1	..	..	..	..	..	..	..	..	..	..
Atlanta	38,000	7	13	17.6	2	1	1	5	1	..	..	..	..	..	..	..	..
Savannah	33,248	16	21	33.1	8	1	..	1	..	..	..	..	..	..	..	1	1
Fla...Jacksonville	10,000	6	8	41.7	1	1	..	1	..	1	..	..	..	..	..	..	..
Key West	12,000	3	8	34.8	1	..	..	1	..	..	..	..	..	1	..	..	..
Ala...Mobile	40,000	6	22	28.6	3	..	..	..	..	3	..	..	..	1	..	..	..
Miss..Vicksburg	12,500	..	5	20.8	..	..	..	..	..	2	..	..	..	..	..	1	..
La....New Orleans	216,359	34	104	25.0	4	6	1	4	2	10	..	..	1	..	..	..	..
Shreveport	8,033	5	8	52.2	..	1	..	..	..	3	..	..	..	..	..	..	..
Morgan City	2,018	1	1	25.8	..	..	..	..	..	1	..	..	..	..	..	..	..
Baton Rouge	7,250	..	1	7.2	..	..	..	..	..	1	..	..	..	..	..	..	..
Tex..San Antonio	20,597	4	9	22.8	2	1	..	1	..	..	..	..	..	..	..	..	..
Austin	16,000	2	6	19.6	2	..	..	3	..	..	..	..	..	..	..	..	..
Tenn.Nashville	43,543	4	15	17.7	2	..	..	..	2	..	1	..	..	..	..	..	1
Ky...Louisville	175,000	18	43	12.8	9	4	1	7	1	3	..	..	..	..	..	..	..
Ohio.Cincinnati	280,000	31	81	15.1	12	4	3	10	..	1	..	..	1	..	..	1	3
Cleveland	175,000	..	65	19.4	5	2	9	2	1	..	1	..	..	..	..	..	1
Dayton	39,250	10	20	26.6	1	2	1	2	3	..	..	..	..	..	..	..	1
Ind...Indianapolis	75,350	8	20	13.6	..	1	..	1	2	1	2	..	..	..	..	..	1
Evansville	30,000	1	3	12 3	1	..	..	..	..	..	1	..	..	..	..	..	..
Ill....Chicago	503,298	109	200	30.7	13	13	35	19	5	1	9	..	..	2	1	1	7
Peoria	34,850	4	13	19.4	..	..	2	2	..	2	1	..	..	..	..	..	..
Wis..Milwaukee	116,000	24	47	21.2	7	4	..	4	1	..	2	..	1	2	..	..	3
Minn.St. Paul	41,800	6	15	18.8	..	..	2	2	3	..	..	..	..	..	..	..	3
Mich.East Saginaw	19,065	1	3	8.3	..	..	1	1	..	..	..	..	..	..	..	..	..
Iowa.Davenport	23,000	2	8	18.2	1	1	..	..	2	1	1	..	..	..	..	..	..
Mo...St. Louis	331,392	46	139	21.9	17	4	5	11	6	8	..	..	..	4	..	1	8
Nebr.Omaha	31,000	1	4	6.9	..	..	..	..	..	1	..	..	..	..	..	..	..
Kans.Lawrence	8,500	4	4	24.1	..	2	1	..	..	..	..	..	..	..	..	..	..
Colo..Boulder	3,030	1	2	34.4	..	..	1	..	..	..	..	..	..	..	..	..	..
Utah.Salt Lake City	25,000	6	7	14.6	..	..	2	2	..	..	..	..	..	..	..	..	..
Cal...San Francisco	233,700	29	78	17.4	15	8	2	6	2	2	..	..	..	1	..	..	3
Sacramento	21,500	1	5	12.1	1	..	..	..	..	..	..	..	..	..	..	..	..

Mortality in Foreign Cities at most recent dates, with rates per 1,000.

Countries.	Places.	Population.	Week ending—	Total Deaths.	Annual rate per 1,000.	Cholera.	Yellow Fever.	Small-pox.	Typhoid and Typhus Fevers.	Other Contagious Diseases.
			1860.							
Canada	Kingston	16,000	Sept. 25	5	16.3	....	....	....	....	....
Bermuda	Hamilton	14,867	Sept. 21	1	3.5	....	....	....	....	....
Do	....do	14,867	Sept. 28	5	17.5	....	....	....	4	....
Cuba	Havana	195,437	Sept. 18	152	40.6	....	17	10	3	....
Trinidad	Port of Spain	30,000	July 17	38	66.1	....	....	....	....	....
Do	....do	30,000	July 24	19	33.0	....	....	....	....	....
Mexico	Matamoras	16,000	Sept. 18	5	16.2	....	....	1	....	....
Brazil	Rio de Janeiro	330,000	Aug. 28	169	26.8	....	2	1	4	7
Do	Pernambuco	126,575	Aug. 8	55	22.7	....	....	5	....	....
Do	....do	126,575	Aug. 15	63	26.0	....	....	4	....	....
Do	....do	126,575	Aug. 22	63	26.0	....	....	11	1	....
Do	....do	126,575	Aug. 29	61	25.1	....	1	5	1	....
Do	...do	126,575	Sept. 5	60	24.7	....	....	8	....	....
Do	Bahia	135,000	July 31	87	33.4	....	....	2	2	....
Do	....do	135,000	Aug. 7	91	34.9	....	....	1	1	....
Do	....do	135,000	Aug. 14	88	33.7	....	....	1	2	....
Do	....do	135,000	Aug. 21	90	34.5	....	....	....	2	....
Do	....do	135,000	Aug. 28	89	34.1	....	....	1	2	....
Ireland	Queenstown	10,000	Sept. 18	5	26.1	....	....	....	....	....
Do	Belfast	230,000	Sept. 18	79	22.6	....	....	....	3	2
Do	Dublin	314,666	Sept. 18	237	37.7	....	....	1	7	34
Do	Londonderry	30,884	Sept. 11	9	15.2	....	....	....	6	....
Scotland	Dundee	155,100	Sept. 11	40	13.5	....	....	....	1	6
Do	Glasgow	589,598	Sept. 11	198	17.5	....	....	....	13	15
Do	Leith	58,479	Sept. 18	19	16.9	....	....	....	....	3
England	London	3,664,169	Sept. 11	1,391	19.8	....	....	5	17	89
Do	Liverpool	544,056	Sept. 11	402	39.0	....	....	....	41	53
Do	Bristol and Clifton	213,500	Sept. 11	98	23.9	....	....	....	2	7
Do	Tunstall	144,549	Sept. 11	101	36.3	....	....	....	1	6
Do	Sheffield	304,938	Sept. 18	161	27.5	....	....	....	....	....
Wales	Cardiff	82,364	Sept. 18	42	26.5	....	....	....	2	10
France	Paris	1,988,806	Sept. 9	1,009	26.4	....	....	32	33	70
Do	....do	1,988,806	Sept. 16	881	23.1	....	....	11	38	57
Do	Havre	92,068	Sept. 11	90	50.9	....	....	....	....	....
Do	Lyons	342,815	Aug. 28	196	29.8	....	....	11	15	4
Do	....do	342,815	Sept. 4	191	29.0	....	....	6	14	4
Do	....do	342,815	Sept. 11	172	26.2	....	....	7	11	3
Do	Rouen	104,902	Sept. 18	51	25.4	....	....	....	....	....
Switzerland	Zurich	22,103	Sept. 11	4	9.4	....	....	....	....	1
Holland	Amsterdam	316,952	Sept. 11	184	30.3	....	....	....	4	5
Do	Rotterdam	150,378	Sept. 18	69	23.9	....	....	....	3	13
Germany	Berlin	1,096,644	Sept. 4	713	33.8	....	....	....	56	202
Do	Barmen	95,000	Sept. 11	47	25.7	....	....	....	2	4
Do	Brunswick	74,000	Sept. 11	46	32.4	....	....	....	1	1
Do	Breslau	276,000	Sept. 4	165	31.1	....	....	....	6	28
Do	Frankfort	130,000	Sept. 11	40	16.0	....	....	....	....	....
Do	Hamburg	400,000	Aug. 28	236	30.8	....	....	....	....	11
Do	Bremen	109,000	Sept. 4	41	19.6	....	....	....	....	....
Saxony	Leipsic	150,836	Sept. 11	83	28.6	....	....	....	3	6
Do	Dresden	230,500	Sept. 4	126	29.7	....	....	....	....	22
Belgium	Antwerp	173,643	Sept. 11	97	29.1	....	....	8	19	4
Do	....do	173,643	Sept. 18	89	24.7	....	....	5	3	2
Denmark	Copenhagen	235,254	Sept. 7	162	36.0	....	....	....	24	13
Italy	Venice	141,004	Aug. 7	61	22.5	....	....	2	1	4
Do	....do	141,004	Aug. 14	59	21.8	....	....	1	3	....
Do	....do	141,004	Aug. 21	61	22.5	....	....	2	2	3
Do	....do	141,004	Aug. 28	76	28.0	....	....	1	1	7
Austria	Vienna	746,243	Sept. 11	371	22.9	....	....	6	2	7
Roumania	Bucharest	177,646	July 31	109	32.0	....	....	3	6	5
Do	do	177,646	Aug. 14	103	30.2	....	....	2	3	11
Hungary	Buda-Pesth	344,604	Aug. 28	229	34.6	....	....	2	4	....
Russia	Warsaw	357,169	Sept. 4	257	38.5	....	....	1	....	....
Sweden	Stockholm	169,429	Sept. 4	99	31.6	....	....	....	....	22
Norway	Christiania	116,801	Sept. 11	65	28.9	....	....	....	17	16
Portugal	Oporto	108,346	Aug. 21	86	57.4	....	....	....	....	....
Do	...do	108,346	Aug. 28	88	58.3	....	....	....	....	....
Do	Lisbon	225,152	Aug. 21	138	32.0	....	....	1	8	....
Spain	Seville	138,000	Aug. 29	83	31.4	....	....	....	1	19
Do	....do	138,000	Sept. 5	90	34.0	....	....	4	....	18
India	Calcutta	429,535	Aug. 21	210	25.5	....	....	....	12	1

Literature.

Index-Catalogue, Vol. 1, of the Library of the Surgeon-General's office, United States Army, has made its appearance. It is the beginning of the crowning work of the great enterprise so well conceived and successfully carried forward by Dr. John S. Billings, U. S. Army, with which most of our readers, and physicians everywhere, are already more or less familiar. The library is one of the largest of the kind in the world, and to be of value, a catalogue is an essential feature, but no mere catalogue in the ordinary acceptation of the term—such an one would have been of little use. The form adopted is essentially that of the "Specimen-Fasciculus," published in 1876, and includes both the names of authors and the titles of all books and original articles in the medical journals and transactions contained in the library. The magnitude of the work may be approximately appreciated by this first volume of nearly 900 pages quarto, which includes only a little more than the letter A: A—Berlinski. The list of Abbreviations and titles of Periodicals alone, take up 126 pages. There are 9,090 author titles, representing 8,031 volumes and 6,398 pamphlets; 9,000 subject titles of separate books and pamphlets, and 34,604 of articles in periodicals. But want of space in our pages forbids the extended notice which this first grand volume alone merits. It is to be followed, to complete the work, by eight or nine others of equal magnitude. And of what use without access to books in Washington? the reader may exclaim. *This:* So perfect is the organization of the library, any person under reasonable guaranties can make out a requisition for books and have them forwarded and deposited for his use in any adjacent well-appointed library.

The work is altogether one of the grandest achievements in literature of any age or country; and American physicians may well take special pride in it as a co-ordinate work of the Medical Museum, and the great Medical and Surgical History of the War, accomplished by the Medical Department of the Army.

Duhring's Atlas of Skin Diseases,* Part VII.: Eczema (pustulosum), Impetego Contagiosa, Syphiloderma (papulosum), and Lupus Vulgaris, is—like the preceding parts of this admirable

* Atlas of Skin Diseases, by Louis A. Duhring, M.D., Professor of Skin Diseases in the Hospital of the University of Pennsylvania; Physician to the Dispensary for Skin Diseases, Philadelphia; Dermatologist to the Philadelphia Hospital, etc., etc. Philadelphia: J. B. Lippincott & Co.

work—true to nature, rarely equaled, and not excelled by any other illustrated work on skin diseases ever published. Every medical practitioner, at least every one outside of the great medical centres, and all who are too busy to attend hospitals and dispensaries, require some illustrated work as an aid to diagnosis and correct treatment of skin diseases. With this admirable work, and Duhring's text book on Diseases of the Skin, by the same publishers, every physician may be as fully competent to recognize and successfully treat diseases of the skin, as of any other tissue. Every practitioner ought to have it. $2.50 per part.

Transactions of the Medical and Chirurgical Faculty of Maryland, eighty-second annual session, held in Baltimore, April, 1880. After the minutes of the meeting, follow the reports of several standing committees, on library, publication, etc., and next the Inaugural Address by the President, Prof. S. C. Chew, M.D., on *Medicine in the Past and in the Future,* and the Annual Address, by Prof. Jno. W. Mallet, M.D., on *The Claims of Science for its Own Sake upon the Medical Profession.* Both of these addresses are limited to the sphere of practical medicine. The reports of sections on surgery, by Drs. Christopher Johnson, E. F. Milholland and Oscar J. Caskery; Practice of Medicine, by Prof. A. B. Arnold, M.D.; Obstetrics and Gynecology, by Bernard Browne, M.D.; Psychology, by I. D. Thompson, M.D., and Ophthalmology and Otology, by J. J. Chisholm, M.D., respectively, except Dr. Thompson's on Psychology, summarize the advances made in these several departments. The special subject of Dr. Thompson's report is, "*What can be Done for our Imbeciles?*" He strongly urges distinctive treatment for this class of unfortunates, comprehending the best efforts of the training school. He estimates the number of imbeciles in Maryland to be about one in every thousand of the population, and appeals to the sympathy and aid of the medical profession as well as to the State authorities for aid to establish institutions adapted to their proper care and training.

The Report of Section on Sanitary Science, by Jas. A. Steuart, M.D., besides a brief review of the subject in general, considers especially the dangers of pump water in close proximity to privy vaults in the city of Baltimore. Of the 90,000 houses within the corporate limits of the city, each having one or more privy wells upon their premises, about 40,000 are dug to water, for the purpose of avoiding the necessity of emptying, some never, others only after many years. Reference is made to an examination of the water of many of these wells recently, by Prof. Tonry, and the analyses published in the Report of the Health Department (see THE SANITARIAN, current series,

p. 285) demonstrating the foulness of the drinking water of Baltimore, and accounting for the prevalence of typhoid fever. Sewerage is urged as the only remedy.

There are special papers on the *Extraction of Cataract*, by Geo. Reuling, M.D.; *Clonic Spasm of the Muscles of the Arms and Trunk*, by Randolph Winslow, M.D.; *Use of Caustics in Dermatological Practice, with Special Reference to the Treatment of New Growths*, by L. E. Atkinson, M.D.; and *Diagnosis of Malignant Tumors of the Upper Jaw in Youth*, by L. McLane Tiffany, M.D.

Dunglison's School Physiology* is well arranged and well adapted to academic use. It is no longer a question whether physiology should be taught in common schools and academies, but the best means of teaching it. The book before us is divested of all unnecessary technicalities, is appropriately illustrated with excellent wood-cuts, and divided into short chapters, all concluding with concise practical questions. We commend it to all boards of education and teachers as one of the best books of its kind.

Scribner is now ten years old, and the managers celebrate the beginning of its second decade in the November number with four large engravings by Cole, in addition to the usual profusion of elegant engravings by other celebrated artists. The literary qualities are of commensurate excellence: An essay on Whitman, by Stedman; a fine study of Gladstone, by a Member of Parliament; a descriptive paper on the Bordentown (N. J.) Bonapartes; more of the pathetic life of Millet, a critique of the painter Vedder; a stirring account of the battle of Mobile Bay, *apropos* of the new statue of Farragut, by St. Gaudens, and some practical suggestions about Tableaux, with illustrations. The first chapters (twenty-eight pages) of "Peter the Great as Ruler and Reformer," and of "Tiger Lily," a new short serial, with other elegant features common to this magazine, make up an exceedingly attractive number.

Exemption from Vaccination.—*The Pacific Medical and Surgical Journal* refers those who regard vaccination as "a relic of barbarism," to the medical statistics of India, where, in three of the local governments the total deaths from small-pox in the year 1878 were 226,946, and advises the anti-vaccinationists to travel off to the Punjaub, where they may enjoy the fruits of exemption from the Jennerian curse. Civilization and humanity can well dispense with their reformatory services.

*A New School Physiology. By Richard J. Dunglison, A.M., M.D., Secretary of American Academy of Medicine, Author of the "Practitioner's Reference Book," "Dunglison's Medical Dictionary," "History of Medicine," etc., etc. Philadelphia: Porter & Coates.

Timins' Artificial Disinfection is a practical pamphlet of forty pages, for the sick room and room cleansing after the occurrence of contagious diseases, which is well worthy of extensive circulation. London: J. & A. Churchill. Price, eighteen pence.

St. Nicholas, for November, is the first number of volume eight, and signalizes the event by an increase in both the size and number of the pages, and yet as ever running over with instructive and amusing literature for the young folk. It is the most wholesome food for young minds we know of, and we commend it to all households.

Rumbold's Hygiene of Catarrh * is a good practical book on a very important subject, which all young practitioners, especially, should possess themselves of. It will serve to correct many erroneous impressions in regard to the nature and dangers of neglected catarrh, and the mischief of improper treatment. Under the division of Hygienic Measures, many useful hints are given in regard to clothing and habits of universal application. Under Sanative Measures is comprehended treatment by medication, as well, and an especially good chapter on tobacco—showing wherein it frequently does harm, insidiously, while "soothing the nerves," etc. Excepting some blemishes due to apparent carelessness in proof-reading, and an overestimate of the dangers of too frequently changing the under-clothing, and bathing, it is an excellent book.

Connecticut Medical Society.—The Proceedings of the Eighty-ninth Annual Convention, held at New Haven, May 26 and 27, 8vo., pp. 194, open with a brief address by A. R. Goodrich, M.D., President, on the past, present and future relations of the Society to the public and to the Commonwealth, with special reference to, and commendation of, the State Board of Health and the value of its work; and recommendation of such enlargement of its powers, if need be, as will effectually prevent the unlimited sale of poisons. He also suggests the active influence of the Society for the enactment of such laws as will protect the community from the impositions of quackery, and some action regulating the employment of expert testimony.

The report of the Committee on matters of professional interest in the State felicitates the Society and the community that, during the past year, there were no serious epidemics, but little sickness and but few cases of sufficient interest to bring before the Society. Dr. W. R. Bartlett, reporter for New Haven County, recites the case of a

* Hygienic and Sanative Measures for Chronic Catarrhal Inflammation of the Nose, Throat and Ears, Part I., by Thomas F. Rumbold, M.D. 12mo, pp. 174. Illustrated. St. Louis: Geo. O. Rumbold & Co.

family in which there occurred considerable sore throat, and one death from pneumonia, in a child seven months old; it was found that the cistern was foul, and that a cess-pool was situated within eight feet of the well, and the ground in the cellar near the cess-pool was saturated with overflow.

The Insane Diathesis is the subject of an interesting Essay by Dr. H. P. Stearn, who, in substance, defines it to be a continuous exaltation of sensibility to nervous impressions which are common to all persons temporarily; in other words, the insane diathesis consists of "a nervous system so illy adjusted with its environment that, when brought in contact with its exciting influences, there occur abnormal instead of normal results, and these become more or less continuous, instead of evanescent."

Dr. J. P. C. Foster furnishes an Essay on *Hereditary Transmission of Syphilis*, the conclusions of which are first, that the hereditary transmission occurs at the time of conception; second, there is no evidence to establish a transmission of the disease through the utero-placental circulation. These are the only papers bearing upon preventive medicine. There are several short practical papers and cases related; and Essays on Medical Education, by Dr. D. A. Cleveland; Examination of the Eye as a Help to the Diagnosis of Extra Ocular Diseases, by Dr. N. E. Worden; Functional Diseases, by Dr. J. B. Kent; and Chrysophanic Acid as a Remedy in Diseases of the Skin, by Dr. C. J. Fox. Chief officers elected for the ensuing year: President, Gideon L. Platt, M.D., Waterbury; Vice-President, Wm. Deming, M.D., Litchfield; Treasurer, F. D. Edgerton, M.D., Middletown; Secretary, C. W. Chamberlain, M.D., Hartford. Honorary members elected: A. N. Bell, Garden City, L. I.; E. C. Seguin, New York.

Hancock.—"Sketch of the Life and Public Services of Winfield Scott Hancock, by O. C. Gardner, Esq., formerly associate editor of the *Democratic Review*" (John Polhemus, Publisher, New York), is a singularly comprehensive pamphlet of thirty pages, which everybody in the United States ought to read, regardless of politics. For while it fulfills, in an eminent degree, the best characteristics of an accomplished essayist—accuracy and conciseness—it is an alluring introduction to a subject and a period in the history of the country, without a knowledge of which no one can be considered well informed.

The Newspaper Directory of Geo. P. Rowell & Co., of New York, for 1880, comprises a book of over 1,000 pages, handsomely bound, and elegantly printed on tinted paper, combining in the most methodical and systematic manner for easy reference, the name of every paper in the United States, its proprietors, politics, size, day of

publication and its circulation. The arrangements of the lists by States, and in alphabetical order, is such as to make reference easy; and besides, there is for every town in which a newspaper is published, a statement of location, population, lines of communication, and distinguishing characteristics, that is very valuable to all who seek information of a general nature.

The Influence of School Life upon the Eyesight, with special reference to the public schools of Dayton, O., by W. J. Conklin, M.D., printed by order of the Board of Education, is an excellent summary of recent observations upon this important subject by many observers. And it is a good sign when boards of education are sufficiently impressed with the importance of it, as in this case, as to order the publication and dissemination of a paper bearing upon it.

The Census.—The following are all the cities in the Union, so far reported, with a population over one hundred thousand:

New York	1,209,561
Philadelphia	847,452
Brooklyn	554,698
Chicago	477,500
St. Louis	377,000
Boston	352,000
Baltimore	330,000
Cincinnati	246,153
San Francisco	227,350
New Orleans	207,328
Washington, District Columbia	160,000
Cleveland	157,946
Buffalo	149,500
Newark	136,983
Milwaukee	130,000
Detroit	119,700
Louisville, Kentucky	112,000
Providence, Rhode Island	104,500

Jersey City will be included in the above list when full returns are in. Among the notable increase in population in smaller cities, Denver comes first. In 1870 it contained 4,750 souls; in 1880, 34,000; a gain of 614 per cent. Minneapolis, Minnesota, is also worthy of attention. Its population is now 45,000; in 1870 it was only 13,066; a gain of 244 per cent. Pawtucket, Rhode Island, increase is 195 per cent., its population in 1880 being 19,538, and in 1870, 6,619. Atlanta, Georgia, is thriving, too. She now figures on 45,000 souls, against 21,789 in 1870; a gain of 106 per cent. St. Paul, Minnesota, makes a good exhibit, and a clear gain of 100 per cent., with a population of 40,000 in 1880, against 20,000 in 1870.

Publications Received.—Beale's Slight Ailments; Robinson's Nasal Catarrh; Mackenzie's Pharynx, Larynx and Trachea (Wood's Library); Twenty-fifth Annual Report of Births, Marriages and

Deaths in Providence ; Chisholm's Myopia ; Browne's Medical Hints on the Production and Management of the Singing Voice ; Ranney's Internal Urethrotomy ; Report of Bureau of General Sanitary Science to the American Institution of Homœopathy ; Bulkley on the Management of Infantile Eczema ; Smith's Exsection of Lower End of Femur ; National Association for the Protection of the Insane ; Transactions State Med. Society of Kansas ; Drug Attenuation—American Institute of Homœopathy ; Transactions Missouri State Medical Association.

New Exchanges.—*La Independencia Médica.* Semanario destinado especialmente a defender los intereses cientificos, morales y profesionales del Cuerpo Medico Mexicano. Este semanario aparece los dias 1, 8, 15, y 22 de cada mes. Director, Dr. Fernando Malanco. Redactores: Doctores.—Ladislao Bellina, Juan Govantes y muchos otros. Imprenta del Comercio de Dublan y C^{a}.—Cordobanes num. 8, Mexico. Numbers 1 to 10 received.

El Observador Medico. Revista cientifica de la Asociacion Médica "*Pedro Escobedo.*" El periódico se repartirá á las siete de la mañana del primer dia de cada mes. Director, Dr. Pedro Diez de Bonilla. Todas los publicaciones que recibamos en cambio, deben dirigirse á la 2^{a} calle de Santa Catarina a núm. 4—0 núm. 3 de la calle del Espiritu Santo. Mexico.

El Médico y Cirujano Centro-Americano. Publicacion mensual de Medicina, Cirujia y los ramos colaterales. Propietario y Editor: Ferd. C. Valentine, Dr. en Medicina Guatemala, Centra-America.

El Monitor de la Salud. Revista Quincenal de Higiene Pública y de Medicina domestica, con seccion especial dedicada á los niños enfermos: publicado por la Enciclopedia Médico-Farmaceutica. Bajo la direccion del Dr. D. Carlos Ronquillo. La Enciclopedia sale todos los Jueves, constando de ocho paginas, ó sean 16 columnas, sin las cubiertas, etc. Precios de suscricion; Estrangero y Ultramar al año 72 reales. Barcelona. Administracion. Cortes (gran via), 289 y 291 Ensanche.

Gazette Hebdomadaire des Sciences Médicales de Bordeaux, paraissant le Samedi. Comite de rédaction; MM. Coyne, Prof. d'Anatomie Pathologique; Guilland, Prof. d'Histoire Naturelle; Jolyet, Prof. de Médecine expérimentale; Lagardelle, chargé du Cours de Clinique des maladies mentales; Layet, Prof. d'Hygiène; Masse, Prof. de Médecine operatoire; Picot, Prof. de Clinique Médicale. Bordeaux. —Imprimerie Nouvelle, A. Bellier 16, rue Gabirel.

Le Technologiste, Archives des progrès de l'Industrie Française et étrangère. Journal hebdomadaire. Rédacteur en chef et Propriétaire Louis Lockert, 35 rue Oberkamf, Paris.

THE SANITARIAN.

A MONTHLY MAGAZINE.

Vol. VIII. DECEMBER, 1880. No. 93.

HOW TO AVOID YELLOW FEVER.

A SYSTEM OF PRELIMINARY ACCLIMATION TO PREVENT YELLOW FEVER OR TO DIMINISH ITS SEVERITY.*

By Dr. Don Victor Perez, Vice President of the Medico-Chirurgical Academy of the Canary Islands, Corresponding Member of the Societies of Cadiz and Barcelona, and of the Anatomical Society of Paris, etc. Translated from the *Boletin de Medicina Naval*, by T. P. Corbally, A.M., M.D.

In the year 1875, as may be seen in the Transactions of the French Society for the Advancement of Sciences, I published, for the first time, my system of preparing the emigrants who, in such numbers, go from these islands to Cuba, so as to enable them to escape yellow fever.

That society, which holds its meetings every year in some one of the larger cities of France, met, in 1875, in the city of Nantes. The time allowed to each member is always short, and never sufficient for the reading of a lengthy paper, nor for a prolonged discussion; I was, consequently, limited on that occasion to the pointing out of what I had established years before—a system of preparatory acclimation, which I illustrated by referring to some facts which strengthened the position taken, and I merely alluded to the facts which form the ground-work of the method which I am now about to give in detail.

The number of cases which may be cited in confirmation of this method is now very large, and the people who have witnessed them are beginning to remark the success attending it, and to give it increased confidence. Encouraged by some of my friends and fellow practitioners, I now propose to give a more detailed account of all the circumstances relating to this important question of prophylaxis, and submit it to the judgment of the medical profession.

---

*Read before the Medico-Chirurgical Academy of the Canary Islands, January 13th, 1880.

I will first give some account of the facts and the ideas which led me to try this system, and will cite hereafter some of the most important and best authenticated cases. I will also give, before I close, some statistics of the mortality in Cuba, the severity of which I deem necessary to disclose, in order to counteract the false and interested assertions with which recruiters (armadores) and traders delude their simple and unfortunate victims, by representing the dangers which they must there encounter as mere trifles.

In 1849, when I was studying medicine in Paris, one of my teachers performed a series of experiments in order to test the power to prevent putrefaction, of certain substances which he thought possessed this property. Many such were made, and most of them fully realized his expectations.

In an article which I published in 1865, in Santa Cruz de Tenerife, under the title, *Notes on the Preservation of Cereals*, these various antiputrescent substances were given, as they had been previously, in 1846 to 1849, by Prof. Ed. Robin, and they may be found in the *Gazette des Hôpiteaux*, in *La Revue Scientifique*, tome 36, page 97, and in other periodicals. Of all the substances capable of preventing putrefaction then discovered, coal oil (aceite de hulla) attracted the most attention, and it was the one we found most serviceable at that time in all our experiments, and it is the one I have used most frequently in my experiments since I have been in these islands. The purified oil could not then be found in France, and I remember that it was only after great search that we found two gallons in a drug store in Southampton.

It is not without special reasons that I dwell upon this circumstance, since it goes to show that, previous to that time, this article, which I shall call primitive (primordial), had no medical uses, nor had any of its derivatives, as benzine, coal tar, phenic acid, carbolic acid, etc., which are now so justly celebrated. This volatile product, like other oils of the same class, arrests the process of putrefaction, as was foreseen by Prof. Robin, either, as he thought, by neutralizing the action of the oxygen, or, according to the theory of M. Pasteur, by destroying the animalculæ or microscopic vegetations which, in his opinion, are necessary to cause the decomposition of organic substances.

This new class of agents which has the power to preserve organic substances by preventing putrefaction, acts, although in a manner very different, like the hypophosphites, of which so much has been said lately; like the metallic salts, tannin, and other agents recognized as preventives of putrefaction and fermentation; in a word, as preservers of organic substances. Another scientific truth which he began to teach about the same time, and one which is generally accepted at the present day, is that these same anti-combustible agents, *at the same time that they lessen or entirely prevent decomposition, the development and the formation of new products in substances deprived of life, they also destroy or lessen the tendency to destruction in those in which vitality has not been lost, by causing, in proportion to the intensity with which they act, the destruction or the diminution of the most important effects of the morbific agent.* This is a most important and fruitful principle, established by the author, and one from which a great many modern

scientific truths have been deduced. It is one of the two on which we rely for the establishment of our method of preventing yellow fever.

The modifying influence of the combustion, necessary to the support of the vital functions, being admitted, and the agents most easily applied and most certain in their effects, at the same time that they are free from danger, being recognized, their application must become varied. We may cite, as an example in surgery, the antiseptic treatment of Lister; in therapeutics, the use of so many agents which are now recognized as possessing the power to lessen or to prevent combustion in the animal economy; in hygiene, the modern theory of alimentation, the various methods of disinfection, etc.

Having been engaged in the study of these substances since 1849, and having made, in the years 1864 and '65, various experiments on animals, in order to confirm certain applications which Robin held as theoretically correct, and also to determine the true action of chloroform, for the reason that its effects are always more dangerous in persons of full habit, such as frequently require the services of a dentist, or in those who are often found wounded on the field of battle, than in those who have been previously reduced by sickness, I then recognized the fact that it was easy, very easy, to reduce the necessary respiration in animals, without endangering their lives, as may be seen in a note which my associate published in August, 1865 (*Comptes rendus de l'Académie des Sciences de Paris*). It would not, then, be difficult to obtain the fourth application, which was pointed out, theoretically, by the same author, in an article published in the *Moniteur Scientifique* for August the first, of the same year, page 711; that is to say, by using the same means we can obtain a diminution of the amount of respiration necessary, in such persons as are about to emigrate to America, so that they may arrive there in a condition of artificial anæmia, similar to that always produced by the action of the climate of tropical regions on the white inhabitants of higher latitudes, which condition is generally known by the name of acclimation, and may be observed in all those who return from Cuba.

The idea of being able to produce, without any risk whatever, the same results which climate alone has hitherto effected, filled me with confidence as to the result, and gave a certain degree of security in undertaking my experiments. Indeed, Europeans who have been for a long time resident in these tropical climates, are not the only persons who enjoy the greatest immunity, when they are exposed to the contagion of yellow fever; on the contrary, those who, on account of race, of temperament, of sex, of age, or from the peculiarities of their mode of life, or on account of medical treatment for previous diseases, may be more or less anæmic than usual, are those who undoubtedly suffer least on their arrival at points where fever is endemic.

Besides, we find that it is chiefly negroes and other races of color, those of a lymphatic temperament, women, young children, inebriates, those who have undergone mercurial or arsenical treatment, who, without exception, run less risk than those of a sanguine and robust temperament, those who arrive full-blooded, requiring the active respiratory powers which cold and temperate climates render necessary in northern nations.

We know that among our emigrants, the inhabitants of Santa Cruz, of Candeleria, and of all the southern shores of our islands, are much less susceptible to tropical diseases than the people of central and of elevated regions ; and that the inhabitants of the north of the Peninsula are more so than the people of Andalusia. Can any one doubt that the temperament of those who are attacked with greatest violence, as those of whom I have just spoken, have more of the sanguine character than those who are more favored? That is to say that the inhabitants of the interior and of the north of Spain are farther removed from the anæmic condition which a residence in the Antilles produces, than those of Andalusia and those living on the southern shore of the Mediterranean. Could not any one recognize, in a public assembly. by simply inspecting the temperament and other characteristics, the great majority of persons belonging to either of these regions? Is it not well known that in epidemics which have occurred among us, those recently arrived from the interior suffer more than the inhabitants of the sea coast?

* * * * *

If I have dwelt so long on this topic, it is because, being so fully convinced of the possibility of producing, artificially, the anæmic condition of which I am speaking, and also of the advantage of having this same anæmic condition, when one is obliged to expose himself to the action of miasms, of animalculæ, of vegetable effluvia, or of any other contaminating substance which produces blood poisoning by the destructive fermentation productive of that condition known as yellow fever, it was natural, logical, and easy to associate the two ideas, and thence proceed to the experiments. This is what I have done for years past, and yet, in none of the recent works which I have carefully examined on the literature of the subject in those countries that are undoubtedly at the head of scientific progress, have I been able to find any system of prophylaxis distinctly laid down.

It must be admitted that certain articles have been occasionally recommended, such as coffee and arsenic, of which I myself published an account of a verbal report given to me by an English physician, Dr. Thomas, in 1865; phenic acid, which has been recommended by Dr. Declat since 1873, the hyposulphites, which Prof. Polli, of Milan, has introduced with so much effect and so much skill in the method of induction, and which, although recommended for other purposes, bear so much analogy to that which I have proposed in the fever in question; but no one has attempted to give the name of system, of a naturally and logically deduced method, to those simple recipes, current in times of epidemics, or applicable to certain surgical cases, which bear as much analogy to the principles which we have advocated and to our method of applying them as the methods of using creosote and other empyreumatic substances bear to the system to which Lister has so gloriously given his name. I say gloriously, for, although in this most important advance in the surgery of the present century, we may, as generally happens with great reforms, see that the ideas which have led to them come from other sources, the glory of having been the first to realize it cannot be denied to the author who has given his name to the method. There is always something in the atmosphere of contemporaneous science which,

when any of these new methods claims the right of domicile in it, disputes its claim; and there are always theoretical ideas, systems more or less logical, lucubrations of men possessing great powers of intuition, who, on seeing their ideas realized, dispute its justice, and seek to belittle the practical man, the worker and his discoveries, the idea of which was originally, perhaps, the sole product of his own reflections. Before Lister put in practice his method of pulverization and his antiseptic treatment of wounds, in 1872, before Calvert rendered benzine familiar, enriching various industries therewith, before Declat gave us the various preparations of phenic acid and Petit advocated the properties of coffee, etc., etc., there was known to science the principle of the antagonism between certain substances possessing the property of preserving organic matter, and of modifying at the same time the intensity of vital action, which I have referred to above, and from which I, more than any one else, have been able to draw such results as have enabled me to perfect my system. In the reference which I have made to the *Revue Scientifique* may be seen, in the fourth application, what refers to the prevention of yellow fever, which was the result of our study at that time, of the variety and the utility of the applications to which such important principles might lead. I consider it, therefore, a sacred duty to see that no one who studies this question can refuse to attribute the first ideas of all these reforms to Prof. Edouard Robin. Possessing a mind highly philosophic, a genius truly far-seeing, which has enabled him to foresee all the results, and although he accomplished nothing experimentally, he is none the less deserving of the honor, nor less worthy of the consideration which is due to him by science and by humanity.

Before closing these general remarks and beginning the exposition of the details of my method of preparation, I wish to add that, besides the action of preventing combustion, and consequently, in the same ratio, favorable for producing anæmia, which is the condition desired, and which is inherent in all the principles of my method, I must consider that element which, introduced into the current of the circulation, gives to the blood certain properties opposed to the development in it of all miasms,* which are the cause of the fever of which I am treating.

Suspecting this result, I collected, in 1849, in the surgical clinic of Prof. Guersant, blood from the same individual and from the same region of the body, both before and after he was anæsthetized, and in the course of our experiments, M. Robin and myself saw that putrefaction was retarded in a remarkable degree in the vial which contained the blood taken while the individual was under the influence of the anæsthetic. From that time, then, dates the idea on which I am about to insist, and which is the other factor which explains the relative immunity of all those who are more or less saturated with the anti-combustible, anti-putrid substances which have been the cause of anæmia.

Not wishing to extend this article to too great length, I withhold much that the importance of the subject would warrant, but I think that what I have said will be sufficient, when addressed to compan-

* The same may be said of any kind of virus.

ions who are familiar with the great advances these questions have made since that time; and I hope it will be sufficient to remind them that, as Dr. Polli gave, internally, the sulphites, the efficacy of which has already been demonstrated, to strengthen the system against the causes which produce septicemia, in surgical and in obstetrical cases in which the method of Lister could not be applied; and as Dr. Eigenbrodt met with great success in the use of benzoate of soda as a prophylaxis in an epidemic of diphtheria, so phenic acid may act in the same way in regard to the various special morbific poisons, and which succeeds better in yellow fever than any other substance that has been employed.

Undoubtedly the idea of preventive medication has great attraction for physicians at the present time; the experiments on animals, for the purpose of confirming this principle, are so often repeated, and their results united to observations on the human species have so much force, that it is certainly logical to infer that it is not alone the condition of anæmia that we are looking for which produces the immunity from yellow fever, but the state of saturation with antiputrid elements in which the system is found, and which contributes, conjointly with the anæmia, to effect the desired preservation.

From the time when we began our first experiments, we were guided by those ideas, and the references given show that, as early as 1849, they were in our mind as well-defined principles. To-day we see them applied on every side, and those using them are both earnest and confident. Then, too, we cannot omit to mention that, before the publication by M. Robin, in the same year, a careful examination of the records of scientific discovery shows nothing to be compared with it for importance and originality.

Having stated these preliminaries as briefly as possible, and remembering that, in a country like ours, in which large collections of books are not to be found, and periodicals devoted to professional subjects are scarce, it is impossible to record the names of all who have labored in this field, I pass, without further delay, to give an account of my practical studies and of the results that have attended them.

As I stated in the communication I presented in Nantes, the means I employed to retard combustion were arsenic, the preparations of phenic acid, and coffee, internally and externally in form of vapor, coal oil, benzine and phenic acid, together with defective ventilation of the cabins on ship board, or of the sleeping rooms on shore, the atmosphere of which ought always to be charged with vapors. Arsenic I have given in solution and always in very moderate doses; five to ten centigrammes (from one to two grains) of arsenite of soda, dissolved in 250 grammes (about 8 ounces) of water, to be taken in teaspoonful doses, more or less frequently, according to the time that must elapse before the individual arrives at the point of destination. Experience has shown in this case, as well as in diseases of the skin, the advantage of administering small doses of this preparation; its effect, although slower, is sure to be observed in time, and is more certain, and the system tolerates it much better. Those who have plenty of time before leaving home, may take only one teaspoonful a day of the solution above described, and, accord-

ing to my observation, two months' preparation are sufficient, even with this small dose; however, the treatment should be continued for some months after arriving in the warm climate.

Those who are willing to follow this treatment use coffee in great quantities, and not only do they take it at every meal, but they use it prepared in various other ways (*sopas de café ó gafio**) with which the coffee is mixed. These two substances are the principal agents used in the treatment. Persons who travel as third-class passengers, sleeping between decks, could not make proper arrangements, unless the captain of the vessel should adopt special measures for that purpose, to live in an atmosphere impregnated with coal oil or with phenic acid, and it would be no less difficult to induce them to take the syrup of the acid, prepared by Declat, or any other preparation of this kind, which I always recommend to those who can be induced to follow such a course. From this statement it will be seen that the emigrants who follow my advice may be divided into two classes: the greater number use only arsenic and coffee, and the others add to this the use of phenic acid, either by inhalation or internally. The effect of artificial anæmia is much more marked, and appears much earlier in the latter class, as I pointed out in my communication at Nantes, from which it may also be seen that the result of lessening the combustion in the system to too great an extent, would be to unfit the individual for work. Such a result must certainly be avoided, as it would seriously compromise the use of the method.

If, from the cases in our possession, we might deduce any general principles, we would say that, by using arsenic and coffee alone, there is the advantage of effecting the change in the system more slowly; and when, either for want of time, or from any other cause, we use the acid vapors or the acid itself internally, the anæma is more intense, may be troublesome, and is not, on the whole, more advantageous for the individual seeking immunity.

If, when preparing soldiers, or even private individuals, they could remain, while using the internal remedies, in a climate at once warm and somewhat debilitating, such as is found on the southern shores of our islands or at Santa Cruz, the result would be much more favorable.

Without entering into any details regarding the cases already referred to, I may say that very many have followed the directions I have given them, but the results of many cases I have not been able to ascertain; I will mention only those of which I possess a complete history.

The following are the cases:

1st. A clergyman, Vandama, native of Palma, who was one of the first prepared, went to Cuba, took the fever, which in his case was very mild; he had previously taken only arsenic and coffee.

2d. Six marines belonging to the frigate *Zaragoza*, five of whom were natives of the Peninsula, and the sixth was a resident of the Peninsula from childhood, although born in Caracas. These sailed for Cuba in their frigate, in March, 1876, and began the full regi-

* This the author states to be a dish peculiar to the Philippine Islands.

men at that time; arsenic, coffee in large quantity, vapor of phenic acid, and defective ventilation in their cabin. On arriving in Cuba they had followed the treatment for forty-seven days, and continued it for some time longer. They remained two years in different parts of the island, and returned to Spain without any attack of the fever.

3d. D. G. L. Fernandez, a native of Palma, embarked in April, 1875, and took arsenic and coffee. He arrived in Havana in June, having followed the treatment two months. He remained until the end of July and returned home in good health.

4th. D. L. G. Beltran embarked in 1876, having had the same treatment; remained some time in Cuba and returned to Madrid without having had the fever.

5th. Similar to the fourth.

6th. Da. J. G. de Perera and a female servant embarked in 1877 for Cuba, prepared as those above; the servant had no sickness, the lady had the vomito, but very lightly.

7th. Juana G. de Brito, with a family of six persons, sailed in the early part of 1879, having taken only arsenic and coffee. All had the fever, but in so mild a form that I received a letter thanking me, as they attributed their recovery to the preparation they had, because many of those who were with them died of the fever.

8th. D. F. Hernandez with his family, consisting of ten persons, sailed in the beginning of the same year, having had the same preparation. Four of them had the fever in a very mild form, and quickly recovered. The fifth, the mother, recovered very slowly, having had a miscarriage and copious hemorrhage; the rest of the family were not attacked.

9th. F. and M. Hernandez sailed towards the end of 1878, having taken arsenic and coffee, and a few inhalations. They were respectively twenty and eighteen years of age and of sanguine temperament. Both lived in the city for some time, being occupied as carpenters; at present they are engaged as sailors on the coast of Cuba. They have had some slight indisposition, which, they think, was a mild attack of the fever.

Here is a group of thirty emigrants, of whom fifteen had the fever, but none of whom died; the others remained free from attack. Of these thirty emigrants, eight, besides the arsenic and coffee, used the inhalation of the preparations of phenic acid; of these eight, two think they had the fever, but in a very mild form; twenty-two used only the arsenic and coffee, and of these thirteen had the fever in a mild form.

The number of cases here presented is certainly limited; especially as, in a number previously given in Nantes, one who had used phenic acid internally, and by inhalation, had a light attack of fever, but suffered before and after it from depression of spirits, inability to work, and general dropsy (abotagamiento), consequences, no doubt, of the abuse of the preparations employed. But if the number of cases is small, it proves very clearly the great value of the means recommended, in order to prevent the terrible disease to which they were exposed. Every one who knows anything about the condition of emigrants under similar circumstances, knows very well that under ordinary circumstances, not only would the greater number have been attacked, but we might expect some deaths.

The following table is taken from a very interesting work on naval hygiene, published in Madrid, by DR. D. ANGEL FERNANDEZ-CARO, a distinguished surgeon in the navy. It shows the mortality in the military hospitals in Cuba, for the five years, from 1871 to 1875, which are included in the period that I have been describing.

YELLOW FEVER IN HOSPITALS IN CUBA FROM 1871 TO 1875.

	ENTERED.	CURED.	DIED.	PER CENT.
1871.....	3,449	1,919	1,472	42.67
1872.....	5,201	2,924	2,402	45.39
1873.....	2,893	1,885	1,040	35.93
1874.....	1,038	656	424	40.08
1875.....	2,017	1,059	911	45.76
Total.....	14,688	8,473	6,249	42.00

We see that the average mortality was forty-two per cent nearly. Is it possible that of my fifteen cases that were attacked, that every one would have recovered, when, according to this table, at least six or seven would have died if they followed the course of those that were not prepared? Is not the method worth a continued trial by those who are interested, especially in the army and navy?

—C—

A New Safety-Lamp.—Mr. James M. Douglass, of Edinburgh, has recently patented an invention which seems to afford the means of obviating one of the most serious dangers connected with the working of coal mines. It is well known that the protective efficacy of the Davey Lamp has often been rendered of no avail by the recklessness of the miners, who would persist in taking off the wire-gauze top, either to obtain more light to work with, or to indulge in surreptitious smoking. The expedient of locking the lamps has proved ineffectual to prevent such misconduct, as means have been found for picking the simple locks employed for that purpose.

Mr. Douglass, however, has devised an arrangement whereby any attempt to unscrew the top of the lamp must at once extinguish the light. So effectual is the working of the arrangement that the moment the unscrewing begins the lighted portion of the wick commences to sink in its tube; and before the lamp can be opened it has entirely disappeared, having, in fact, been drawn quite down among the oil. The mechanism is simple and does not seem liable to get out of order; and the expense of fitting it upon the ordinary lamp is said to be trifling. The invention is, we understand, in course of being tried in the Blantyre colliery.—*British Mail.*

THE DANGERS OF CHILDHOOD.*

By Horatio Donkin, M.B.

The truth of Tennyson's expressive words, that—

"Knowledge comes, but Wisdom lingers,"

can perhaps strike none more forcibly than those who are really interested in the study and promotion of the conditions of health. It must be obvious to every one at all conversant with even the most general teachings of sanitary science, that the extent of the practical application of the principles it has already established is still far less than their number and certainty would warrant, or than a student, unaware of the callousness and ignorance of most of us, could easily be brought to believe. Though it must be admitted that there is still vast progress to be made in the knowledge of those laws of individual life and social well-being, which must underlie all our teachings regarding physical and moral health, and therefore all our attempts at the avoidance of physical and moral disease, there still undoubtedly exists such a body of well-ordered and certain science on these subjects that its small diffusion is at once a matter of wonder and an incitement for its further spread. Legislative measures may do, and are doing, much for the furtherance of good sanitary conditions; but the best progress will be made, the knowledge of the few will most surely become the wisdom of the many, when the principles involved have become matters of intelligent conviction among the individuals who are to benefit from their application.

Especially is this true with regard to the upper and middle classes, whose members, by making this knowledge their own, will not only find their proper reward, but will be enabled to help those of the lower who cannot help themselves. "It seems certain," wrote Mr. Simon (in 1871), in his report as medical officer of the Privy Council, "that the deaths which occur in this country are fully a third more numerous than they would be if our existing knowledge of the chief causes of disease were reasonably well applied throughout the country; that of deaths, which in this sense may be called preventable, the average yearly number in England and Wales is about 120,000, and that of the 120,000 cases of preventable suffering, which thus in every year attain their final place in the death register, each unit represents a larger or smaller group of other cases in which preventable disease, not ending in death, though often of far-reaching ill effects on life, has been suffered."

Considerations of space will not permit me to prove by examples how the most well-attested causes of common illnesses are ignored by the masses, as shown in their daily conduct; but though some of this habitual infringement of the laws of health may, to a considerable extent, be due to temporary carelessness of results, and the influence of the pleasure of the moment, yet it is reasonable to believe that an intelligent conviction of the connection between cause and effect in many cases would be a means of preventing a large amount of dis-

* A lecture given for the National Health Society, London.

comfort and widely ramifying suffering in the world at large. Probably no amount of physiological teaching, however forcibly given, would avail much to prevent many persons from constantly exposing themselves to the inflammatory influence of sudden changes of temperature, or cause them to forego the fashionable advantages of insufficient clothing; but it may scarcely be too much to hope that the time is not far distant when the light of recent knowledge and lengthened experience may do much to increase the labors of the well-informed sanitary architect, to raise the importance of the medical officer of health, and perhaps curtail the number of grocers' and confectioners' licenses.

The dangers of all kinds and diseases to which the impressionable periods of infancy and childhood are subject being very numerous, the matter of their prevention when possible—for it is to this that we must confine our attention—becomes a most important chapter in the study of national health in its widest sense, not only because of the special liabilities of these periods to certain physical and other ills, but in view also of the after effects of disease and evil impressions on the man, of whom, as Wordsworth says, "the child is the father." The so-called mental and physical states of the human organism are so intimately blended, and subject to such constant action and reaction, that to treat of this subject as fully as it deserves would involve considerations far beyond the scope of the present lecture. I would, however, mention now, that in infancy—that period in which a most important epoch in the building of the brain, which is the mind's organ, is being passed through—much is dependent on the influence of early impressions. At this time those sensations and perceptions take place which, in close connection with hereditary elements, ultimately help to form the mental habit of the adult, and the emotional side of the child's nature now receives much of its permanent coloring. If we give due regard to these considerations, we shall acknowledge the complexity of the influences which contribute to the development of the child, and the many consequent dangers incidental to this time, and shall understand that the more obvious physical evils against which it is the doctor's special province to warn, are not alone those with which childhood's health is menaced.

In calling attention, then, to the chief of these dangers which present themselves to our minds, I shall first mention some which arise from the special characteristics of childhood, risks which are common to all on physiological grounds, and are therefore of primary interest. And here the questions of food and warmth will take an important place. Secondly, I shall shortly notice a class of dangers which, though not universal, are still of such common occurrence as to deserve consideration; I refer to diseases of a more or less preventable nature, some of which are due to hereditary causes, and others fall under that class which has been called zymotic. And, thirdly, bearing in remembrance the intimate connection between mind and body, I shall touch on the importance of a carefully-ordered early education, which can no longer be regarded as altogether outside the province of sanitary science in its full and real meaning.

1. Although there is no strict line of demarkation from a physiological point of view between the periods of childhood and later

youth, the processes of growth, and to a certain extent of development, being still continued, we may roughly fix as the later limit of childhood the age of about fourteen—the average time of the approximate completion of what is called the "second dentition," or the eruption of the permanent teeth. This period embraces an important part of those physiological operations by which the perfect organism is gradually developed. We may look upon this time as essentially one of construction, in which the foundation is laid for the adult structure that afterwards maintains for a time a state of comparative equilibrium, till the processes of destruction and decay, which are always holding their silent course, gain the upper hand, and old age and death ensue as a natural result. These processes of growth and development are carried on with the greatest vigor during the earliest periods of existence; physiology here teaching us that the rate of increase is slower as time advances. Two points, for our present purpose, must here arrest our attention, viz.: 1. The necessity for the supply of sufficient and proper material for the growing organism to use; and 2. Fitting physical surroundings to favor the organization of this material. During the earliest life Nature is our teacher on the first of these points, and would continue to guide us rightly if we intelligently read and followed her dictates. When, moreover, I have stated that heat seems to be the all-important physical force which most immediately concerns the process of the due construction of the organism out of the material presented to it, it will be clear that the questions of food and warmth during the early periods of childhood are of leading interest to us when considering the physical dangers to which this time is liable.

The great demand, then, as it will appear, for the activity of what are called the digestive and assimilative organs in early childhood renders the want of a supply of material, fitting in quantity and quality, a most common cause of their derangement. The enormous proportion of illnesses and deaths clearly traceable to one or both of these causes, among children of the lower classes, where ignorance and poverty lead often to every possible fault in their mode of feeding, is most striking to the student of preventable disease. It is unnecessary to dwell on the obviously ill effects of an insufficient quantity of food; nor is it within our immediate province, for semi-starvation and its attendant train of evil must ever be an accompaniment of pauperism and over-population. But a wide field for prevention of such maladies as we shall allude to is still left open to the promoter of sanitary science, even though their subjects be not of the wealthier classes. Though many children suffer and die from an insufficient quantity of food, many more suffer severely and many die from its improper quality, which renders it strictly no food at all. To this cause may be traced innumerable cases of wasting in children—rickets, with all its train of hideous deformities—stunted growth and crooked limbs—disturbances of stomach and intestines, and many affections which form a vast chapter in the history of children's diseases. It is by no means uncommon for a doctor to hear from the mother of a miserable and wasted child, which numbers its age by months only, that its appetite is excellent, and even voracious; and, on inquiry, to learn that it shares the family diet of pork and pota-

toes, eating "whatever we do," as the mother says, with an air of complacent satisfaction that she at least has no share in the production of her infant's malady. Less glaring breaches of physiological law are still more common, and we find many children diseased and dying starved, from being prematurely stuffed with flour and bread, and various articles of farinaceous material, grouped together under the ironical name of "Food for Infants."

For the proper feeding of infants, observation of Nature and the study of physiology give us ample lessons. It would occupy too much space to enter into detail on the scales of diet suitable to young children as age goes on. Suffice it to say, in most general terms, that (when practicable) no other food than the mother's milk should be allowed until after seven or eight months at least have passed; and, in default of this, the nearest approach to it according to modern teaching. Should it be necessary to bring up a child by hand, fresh cow's milk, diluted with water or lime-water, as the case may be, and with the addition of some sugar, should at first alone be given, or condensed milk, freely diluted. No other food, with the exception of certain cases, should, as a rule, be allowed before six or seven months have passed, after which time farinaceous matters may be mixed, with due choice and proper preparation, with the milk, which must still form the staple article of the child's diet. This exclusion from the infant's early diet of farinaceous food, such as corn-flour, arrow-root, and similar substances, so frequently given in the first months, is fully justified by the disastrous results which frequently follow on its use, no less than by the lessons of physiology. For there we learn that the glandular organs, which serve to render such starch-containing substances really available as food, are not as yet sufficiently developed. Exceptions occur to these rules, of course, as to nearly all; individual cases permitting of individual adaptation; but by this light the course of infants' feeding should be directed.

With regard to the administration of animal food requiring mastication, the obvious indication, though so often neglected, of the eruption of the teeth, is of important value. In the shape of beef-tea or broth, and proceeding through the pounded and finely-cut stages to the ordinary slice, animal food may judiciously be given according to age.

In having confined my remarks, to a great extent, to the evil effects of improper feeding of children among the poor, I would not be understood to think that similar ills do not exist among the rich. It is only of recent years that any carefully regulated diet table for children has been adhered to by many of the upper classes; now, however, the greater belief in the teachings of science which is pervading the community is working some little effect on the practice of those who either possess that knowledge or can obtain it second-hand.

Still it is not unusual to find the child of the wealthy suffering in common with the child of the poor, from eating the same food as its mother; often, even, drinking the same stimulants. Ignorance in this case is culpable, because remediable with ease, the necessary knowledge being attainable, and the means of carrying it out in practice, the want of which often renders this impossible to the poorer classes, being ready at hand. As the more wealthy classes arrive at

a due appreciation of the great importance of appropriate food to the future health of their children, both with regard to its quantity and its quality, and the times of its administration, there is little fear that they will omit to instruct themselves fully on these points; and to take care that their lessons are carried out in every particular. There is a widespread practice, as common as it is doubtless difficult to avoid, which greatly tends to neglect of this subject—I mean that of confiding the care of children almost entirely, in their earliest years, to nurses and other servants. These, however highly qualified they may appear to be, and for all that they may in some cases be actuated by motives other than that of keeping their places as long as it suits them, cannot be expected to possess much knowledge of the minutiæ of the important duties entrusted to them, or properly to carry out injunctions too often given in only general terms. It is not too much to insist that the young child requires and claims the unremitting careful supervision of the duly instructed mother herself, even for dietetic reasons alone, if the large class of dangers arising from dietetic errors is to be effectually avoided.

To enumerate the various illnesses and untoward symptoms immediately referable to common faults of feeding, of giving too much or improper food to young children, or allowing them to eat and drink whenever they like, would fall more properly under the head of a medical lecture. I cannot, however, insist too strongly on the reality of this causation of innumerable ills in early life—ills which often entail results more or less disastrous. Leaving out of consideration now the important and obvious diseases that frequently spring from errors such as we have pointed out—serious cases of wasting, digestive disturbances, and the many manifestations of rickets, one evil effect of the widespread neglect of this matter is the encouragement of the deplorable, yet popular tendency of credulously flying, in the ignorance of prevention, to fancied methods of cure, and dosing the already suffering child with nauseous medicines, generally in these cases useless, and often harmful. The belief in the curability of maladies by remedies in the form of drugs has always been intense in proportion to the amount of ignorance of the causes and nature of disease. Such medicines, though now regarded by those who know as chiefly an adjunct to other treatment, are credited with omnipotence by those who, knowing nothing, are ready to believe anything. The faith of past ages in medicine of all kinds, superstitiously given without any intelligible principle or method, has still its counterpart. This is evinced, of course, most strongly in the practices of the lower classes, on whom the light of knowledge has not yet fully dawned, and whose unquestioning trust in the efficiency of "doctors' stuff" has stocked the chemist's shop with worthless and pernicious drugs, and contributed to the support of ignorant practitioners and designing quacks. Not content even with waiting till their ignorance and neglect, in the matter of ordinary care, have resulted in making their children ill, and then rushing to drugs to repair the mischief, there are many in charge of young children—and these not always of the lower classes—who cannot even refrain from administering some favorite drug to a healthy new-born infant. And it is not the children of the poor

alone who suffer from the system of over-drugging, but often enough those of the wealthy as well, whose monthly nurses, protected by a belief, shared by their employers, in the mysterious necessity of giving medicines, take many opportunities, conducive to their own repose, of dosing their charges with Paregoric Elixir or Mrs. Winslow's Soothing Syrup.

This comforting creed of the omnipotence of medicine—which prevents in its turn any trouble being taken to arrive rationally at the cause of some of the common maladies as they arise—shows itself in more or less hidden ways in all classes, and, as I have already said, not rarely in the higher ranks of society. Besides the common practice of giving domestic medicines without knowledge or advice, we find in many people a complacent belief that sending for a doctor will be sure to compensate for any evil results their own faults of omission or commission may have occasioned. It is, I think, with regard to children's ailments especially, that this deep-rooted trust in treatment by drugs, as the first and the last thing, obtains most widely; a desire that their children should be actively treated, as a kind of set-off to their previous neglect, being shown by many who would, perhaps, with undue unbelief, refuse to take medicine themselves when it might be advantageous. The reciprocal influence of superstitions such as these on the indolent and uninquiring, and the consequent obscuring of the truth, is found too often in the articles of the popular and alluring creeds of homœopathy and other so-called systems, and form, perhaps, the worst of the evils thereby induced.

Having pointed out the necessity of a due study of the question of nutrition in childhood, as of primary importance, arising from physiological necessities, and hinted at the class of evils likely to result from ignorance on this head, I proceed now to notice briefly the dangers which may arise from the improper clothing of young children, or their undue exposure to weather, a considerable amount of warmth being, as we have seen, a leading desideratum during the time of active construction embraced in the period of childhood. This necessity for warmth is seen most obviously in very early life, a new-born infant rapidly perishing without it. But this necessity continues in an important degree during the earlier years, the strongest children being very sensitive to changes of temperature, and readily parting with their heat. No greater mistake is often made by those who otherwise show care and thoughtfulness in the physical rearing of their children than the endeavor to carry out a false notion that they are hardening them by exposing them to all weathers, even to the cold and damp of our English climate, and for the same reason, or influenced by a regard for appearances, allowing them to be but scantily clothed. It is, perhaps, somewhat difficult to attain to a proper avoidance of the two extremes of undue exposure, and over-coddling in the care of young children. It is common to find that those mothers who clothe their children sufficiently warmly are supremely indifferent or actively antagonistic to the requirements of fresh air and exercise, and of good ventilation in the nursery both by day and night. And it is not rare to hear the hardening system advocated by many who are scientifically orthodox on these last-mentioned points. But the fact remains clear, with many undeniable proofs, that the hardening sys-

tem, carried out as it is unconsciously and unavoidably by our poorer population, numbers its many victims.

The enormous fatality of bronchitis and other chest diseases, apart from constitutional predisposition, and the occurrence of serious gastric and intestinal disorders, all clearly due to cold, as has especially been pointed out by Dr. Eustace Smith, show the necessity of using the obvious preventive measure of keeping up sufficient warmth of body during the period of early childhood. Although I cannot here enlarge on this subject, I would, before passing on, state my full conviction that the well-to-do classes are often much to blame for neglect on this head; and that many long-continued, and, at first sight, somewhat puzzling ailments of young children are often found rapidly to disappear with no other treatment than apppropriately warm clothing.

2. We come now to another class of dangers to childhood, which, though not universal, are still of such frequent occurrence as to deserve notice. I mean those constitutional weaknesses and various manifestations of ill-health, due to heredity, and the large class of diseases which are commonly known as infectious.

With regard to the first-mentioned ailments, it will be sufficient to say, in passing, that though evil effects of this nature cannot be prevented entirely, yet appropriate care and attention to sanitary surroundings may go far towards reducing them to a minimum. The children born of parents affected, in a greater or less degree, with scrofula, or coming of a stock well known to be consumptive, as well as those whose ancestors, immediate or more remote, have been afflicted with any of the manifold kinds of so-called nervous affections, such as mental disease, epilepsy, and the like; each and all these have their own special risks to run, against which to be forewarned by due study and attention, is to be, to a great extent, forearmed by resulting precautions. Among such precautions the injunctions already given with regard to food and clothing and other general hygienic measures, apply with particular force; special adaptations, of course, being necessary for individual cases.

Again, as a last example of the purely physical dangers which we shall give, take the widespread group of so-called infectious diseases. This is a class which must have presented itself to the minds of most. It forms a constant source of dread to anxious mothers. The great prevalence among children of diseases which can be caught by one from another has led to their being popularly classed apart as "children's ailments." Such are, among others, measles, chicken-pox, whooping-cough, and even scarlet fever; and such has been, and, but for vaccination, would be now, small-pox. A very large proportion of the sickness and mortality which presents so high a rate during the whole period of childhood is due to various forms of so-called zymotic disease. The special victimization of children by these poisons is probably not due to any peculiarity of childhood, or to any natural indisposition of adults to become infected by them. But it is to be accounted for, as Dr. Bristowe remarks concerning measles, in his well-known work on medicine, by the constant presence of these diseases amongst us, and their great contagiousness, most persons being therefore attacked by them in early life, and thus protected, as experience shows, in the majority of cases, from subsequent seizures.

In the matter of prevention of these obvious dangers, science has still much to teach us. Beyond isolation of cases when they occur, and the use of disinfectant measures to the best of our knowledge, little can be done in protecting ourselves against poisons of so subtle a character as are those which lend to many of these diseases so great a virulence, and of whose nature we are, for the most part, in utter darkness. One valuable mitigator, or even antidote, we have in the case of perhaps the worst of these maladies, for the frequency and severity of small-pox is demonstrably in inverse proportion to the careful fulfillment of the duties taught us by the splendid discovery of vaccination. For the rest we have no antidote, scientific or otherwise; and we must for the present content ourselves with such avoidance of the risks of infection as the best knowledge dictates, and as is compatible with a quiet life, consoling ourselves for the probability that many such attempts at avoidance will be of little avail, with the reflection that the child, once a sufferer, is for the future protected; that such diseases, serious as they are, are, as a rule, less severe in childhood than in later age, and with the larger hope that to future generations may come greater security with advancing knowledge.

3. The close connection and inter-dependence of mind and body, as I have said at the beginning of this lecture, must be my excuse for dwelling for a short time, in the last place, on some of the lessons which strike us when we consider from this point of view the dangers of childhood. This fact forces itself steadily and with increasing importance on the student of human nature. Let us look at the individual organism with all its varied functions, both mental and physical, as one indissoluble yet complex whole—each of whose separate parts, having a necessary connection with all the rest, cannot be treated independently—and we shall then be able to understand more clearly the frequent examples we see of what we call mental impressions acting directly on the body, not to mention the many varying states of body which profoundly modify the action of the mind. How readily the appetite or the digestion may be arrested by a thought or an emotion; or how, in their turn, thoughts and emotions may have their direction altered by a sudden attack of indigestion or other bodily pain; or how an ill humor may be induced by an east wind, is well known to many of us; and instances of this kind might be multiplied indefinitely. A due attention to bodily health even for its own sake will thus have its share in the production of the object the educator of children has in view, of securing a good mental development, and the healthy working of the mind will be aided by the participation of its organ—the brain—in the general well-being of the body. But the proper culture of the mental nature of the child is of two-fold importance. The obvious influence it must have on the mental habit of the adult will strike every one; the reciprocal effect, that of the mind's impressions on the body, on the other hand, though of far-reaching extent, is not so fully recognized. The physical effects of mental impressions are largely seen in the case of many grown-up people, and are, perhaps, powerful to a great extent in proportion to the want of control shown by the subjects of them. The history of hysteria and allied maladies furnishes us with many

instances of this. It is, therefore, of the first importance to pay due heed to the mental surroundings in the early and what we have called, by no mere figure of speech, the impressionable period of childhood. The power of control, though everybody, of course, starts with different hereditary possibilities and predispositions, is largely developed by experience and time, and one of the leading characteristics of childhood on its mental side may be said to be want of control. Hence, impressions of all kinds, good and bad alike, are made with favorable or fatal facility on the childish brain, and many events and many lessons which would pass unobserved or fall unheeded by the fuller or fully-grown mind, leave often an indelible result on the receptive nature of the child, and become, as it were, part and parcel of himself.

There are many instances of the evil effects on the body of bad and untoward mental impressions and surroundings. The disease called St. Vitus' dance, of so frequent occurrence in childhood, is most probably set going in many instances (as has lately been ably urged by Dr. Sturges) by an external cause apart from the body which it affects. Several cases can be traced to harsh treatment, some to overwork, and very many to fright.

To overwork of the child's brain as a cause of other forms of disease we can only allude and pass on. Associated frequently with a want of fresh air and physical exercise, which is absolutely necessary to health, this cause frequently leads to many forms of illness in children, and may react in its turn with injurious effect on the after capacity for mental work, so defeating the very object held chiefly in view. I do not intend to teach that bodily disease due to such causes as these is a widespread evil among children, for I do not believe that it is; but rather to call to mind that insufficient care in the mental and moral rearing of a child may, and does, prejudice its bodily health; and from a wish to impress this fact, that to attain to the completest avoidance that is practicable of the dangers of childhood, we must endeavor to watch every probable line of their approach, and to contribute our little aid to the development of the true health, or sanity, of the entire organism, the "mens sana in corpore sano." Here, I think, would apply with greater force and even deeper import the warning I have already given against trusting young children overmuch to the care of hired servants, and here are ample reasons for parents to weigh well their own duties as instructors. Though apparently forgotten and cast out of mind, the early lessons of childhood will frequently recur with force, and reassert their influence for good or for bad. This, then, is the time to seize for giving a right direction to manners and morals—an opportunity once lost, perhaps never to return. How difficult it is for later education and circumstances to make a lady, or still more a gentleman, is a matter, perhaps, of commonplace observation, which should point a lesson to all parents. Still more should reflections such as these incite them to a careful attention to the positive teaching of their children, and cause them to dread no less than careless neglect the evil effects of impressing the youthful mind with what is false, in compliance with unreasoning tradition, and to save themselves thought and trouble. The simpler the teaching of the child is, the greater the

adherence to facts, the less necessity will there be for that difficult unlearning and painful reaction so often observed when questionable theories and unproved notions have found an important place in the early lessons.

It is the duty of the mother, then, as well as of all those intrusted with the care of children, to recognize the teachings of science and apply them. To such as are able I would say, make yourselves acquainted, as far as possible, with the well-known conditions of healthy life, and try to learn something of the general laws of Nature which eventually bear upon us all, and by conforming with which we shall make the best progress. Do not rely on traditional maxims, or vague and ill-understood notions in the education of your children, but make it a matter—for it is possible so to do—of scientific thought. To do this, to recognize the existence of laws of life and development, not vainly to struggle against them, will not induce in those who think a course of negligence and inertia, but will rather encourage action by enlightening it.

It has been said by one who, recognizing profoundly the paramount claims of science, showed, too, the readiest human sympathy and active earnestness of purpose, "Remember that scientific thought is the guide of action; that the truth which it arrives at is not that which we can ideally contemplate without error, but that which we may act upon without fear; and you cannot fail to see that scientific thought is not an accompaniment or condition of human progress, but human progress itself." These are the words of the late Professor Clifford. The brightness and depth of his intellect, and the force of his honest teaching, have rendered his early death a national loss, while many can mourn him for the charm of his personal character alone. But his words, though all too few, remain, and his influence will live, not unfruitful, it is to be hoped, in encouraging such a course of action as I have been but faintly endeavoring to indicate.

The acquisition of knowledge of such matters as we have touched on is at the present time within reach of many, and could be made, with due encouragement, still more easy. Very many are the books and lectures devoted to sanitary subjects, and it is the chief object of the National Health Society to spread such information among all classes. Those who are duly alive to the dangers with which their own children are surrounded, must, or ought to be, anxious to assist others less wise than themselves; and it is with this object that, among other means, simple lectures are arranged by this society for the poor women of our crowded districts in London, who are, for the most part, ignorant of the perils to which their children's lives and health are exposed from causes under their own control. The whole aim of the National Health Society in spreading established knowledge and encouraging its practical application, whether among rich or poor, is eminently in accord with science, and conducive to the general good; and is deserving, therefore, of active and intelligent support. But few more ample fields for its work can be found than that which is here treated of; for it is in matters such as these, where error often renders cure impossible, that the most fitting application is found for the society's motto, "Prevention is better than cure."

The Sanitary Record.

QUININE PRODUCTIONS IN INDIA.

It is familiar to persons interested in Indian progress that the experiments begun, ten or twelve years ago, for naturalizing in certain parts of India the best varieties of the cinchona, or Peruvian bark, tree, have been attended with the most remarkable success, and with beneficial effects still more remarkable. In the treatment of the fevers and other forms of disease endemic in India, the employment of quinine has always been a chief means of cure and of prevention. But the increasing demand has raised the cost of the imported drug to a point which rendered its use impossible to millions and tens of millions of the poorer classes of India. Hence it occurred to a few of the more enterprising spirits in the Indian Government that vigorous efforts should be made to acclimatize the cinchona tree itself in certain districts of India and in Ceylon.

The experiments have been entirely successful, and there are now in various stages of growth probably millions of cinchona plants already yielding the Peruvian bark so plentifully and so perfectly that the price of quinine has fallen in Ceylon and other parts to about two rupees (3s. 6d.) the ounce, and to fifty cents the ounce for preparations of a diluted strength; and there is the strongest probability, we may almost say certainty, that in six or seven years the Indian production of quinine will be so large, and the price so low, that it will become a considerable article of export; bearing in mind that every fall in price means extending use in India in the cure and prevention of fever and disease, and therefore the cure and prevention of want and suffering among the poorest class of the native population.

Speculations are now arising concerning the probable destination of the exports of quinine from India, which are now, so to say, "in sight;" and there is good reason for assuming that among the largest and most constant customers for cheap quinine from India would be China. The opium consumed in China is in by far the largest degree taken as medicine by the millions of cultivators who inhabit the low, swampy tracts of country which border the great rivers, and are devoted principally to the growth of rice.

From these large tracts of country, fever and the diseases for which quinine is the specific remedy, are never absent; on the contrary, they are the constant and dreaded scourge with which human life has there to contend, and opium is employed as the medicine easiest to be had and as the cheapest. But if quinine could come into competition with opium, and by dint of a lower price obtain the preference, there is every reason to believe that the immense superiority of quinine over opium as a means of preventing and curing disease, would in a short time produce a revolution in the Chinese consumption of the two drugs; and that the imports of opium from India would be replaced by the imports of quinine from India, and by this happy and simple process a solution would be found for the dangers and uncertainties of the large opium revenue of India, and still more for the perplexing moral questions which cannot be separated from the large and direct share of the Indian, and therefore, of the English Government, in the maintenance of the opium traffic with China.

It is upon the triumphs of English science over Indian difficulties, of which the forests of cinchona trees, now rapidly rising in India and Ceylon, are a late example, that our solid hopes for the future safety and progress of India can alone rest. Cheap conveyance by railways and steamboats has enabled the ryots around Delhi to send wheat and other grain with success even to Mark-Lane, and hence has given a new impetus to agricultural life in the regions of Upper India. Facilities of the same kind, aided by science applied to details of cultivation, have, during the last ten or fifteen years, added largely to the list of commodities which India can now export at a profit; and if it should become, before long, a hard fact of trade that India can substitute quinine for opium in its trade with China, and make more money out of the wholesome than out of the noxious drug, another illustrious example will have been given that in these modern days science is the mighty and beneficent king.—*Pall Mall Gazette.*

———o———

Milk as a Cause of Tuberculous Diseases.—Apropos of Tuberculosis as an Infectious Disease, in October number of THE SANITARIAN, *The Lancet* also recalls previous contributions to the subject, and in particular to a very interesting and exhaustive paper, so long ago as October, 1874, from the pen of Mr. Fleming, then Veterinary Surgeon to the Royal Engineers, which appeared in the *British and Foreign Medico-Chirurgical Review.* In that paper evidence as to the infectiousness of tuberculosis and its accidental transmission from diseases to healthy animals, was given, as well as experimental proof of the production of the disease, not only by inoculation, but also by feeding with tubercular matter and milk from tuberculous cows. Both in that article and in his work on Sanitary Science, published in 1875, Mr. Fleming has insisted upon the urgent necessity that exists for preventing the consumption of the milk and flesh of diseased cattle. In a paper recently read by him at Norwich, he has adduced further proof of the extreme danger to the public from this source, and these proofs are certainly startling and worthy of notice. We learn that tuberculosis among cattle is greatly on the increase, and especially in the higher bred stock; some authorities going so far as to assert that five per cent. are affected. As dairy cows are never inspected as to their state of health, as they furnish by far the larger proportion of phthisical bovines, there can be no doubt as to the gravity of the question in its relation to human tuberculosis. As the pig, an omnivorous creature like man, and bearing a close analogy to the lord of creation in other respects, is most readily infected by feeding with milk or tubercle, there is every reason to think that mankind, and particularly children, may be as susceptible as the porcine tribe. It is somewhat strange that though the note of warning was sounded so frequently and so long ago, it should not have excited attention. It is not too late now to adopt precautions if what is reported be correct. It is high time that the sanitary condition of milk and flesh-producing animals was ascertained. At present there is ample scope for free trade in these diseases and death-dealing articles of food. What with private slaughter houses and unvisited dairies, there is no check whatever.

THE UNITED STATES STEAMER "PLYMOUTH."

Abstract of Report of Sanitary Board subsequent to the effort to freeze her out after the recurrence of yellow fever on board.*

On the 9th of April (1879) a sanitary examination of the *Plymouth* was ordered to be made by a board of medical officers of the Navy, who reported that the infection which had caused the second outbreak of yellow fever on the *Plymouth* seemed to have been retained in the decayed wood of the berth-deck (an opinion likewise expressed by Surgeon Woolverton) or in the bedding or clothing of the men, and recommended that she should be disinfected by the injection of steam and by sulphurous acid gas.†

Owing to the fact that her crew and all her stores were on board at this time, it was not considered practicable to make a thorough examination of all the parts of the ship. As it appeared unadvisable to transfer her stores before the return of colder weather, further investigation was deferred until the vessel could be completely emptied of all her contents.

In the month of February, 1880, after exposure to a freezing temperature, all the stores were discharged, and a second sanitary survey ordered by the department. The present board, to which this duty was intrusted, was referred for detailed instructions to the Surgeon-General of the Navy, and was authorized to raise any portion of the inner planking or the floors of any of the magazines or storerooms, and to remove any obstructions which might conceal impurities or materials affording lodgment for infection.

In order to expose all parts of the ship to view, as well as to give free admission to the disinfecting agents expected to be used, the following preliminary work was performed by a gang of shipwrights, the ship still lying at anchor at the quarantine grounds in the outer harbor of Portsmouth, N. H.

Openings were made in the ceiling and knees of the state-rooms in the starboard steerage. A locker on the port side of the berth-deck, over the coal-bunker, was taken down, and openings were made in the ceiling and knees just forward of this point, portions of the planking being removed. Similar openings were made opposite the galley, on the port side (giving exit to a very offensive odor). Portions of the ceiling on the starboard side of the sick-bay were removed, and the ceiling and knees cut into and examined all along the starboard side of the berth-deck.

In that portion of the fore-hold allotted to general stores, and abaft that to paymaster's stores, the flooring and limber boards were entirely removed, and on the port side one of the bilge-strakes was raised. In the fore-hold proper the flooring was removed to a sufficient extent to permit examination of the bilges and the spaces beneath the water-tanks, and on the starboard side a part of the bilge-strake was cut out. Scuttles were cut in the floors of the forward

---

* Report on Yellow Fever in the U. S. S. *Plymouth* in 1878-9. Prepared under the direction of Philip S. Wales, Surgeon-General U. S. Navy.

† See THE SANITARIAN, Vol, VII., pp. 347-353.

shell-rooms on both sides of the keelson. In the coal-bunkers the flooring was cut through in two places. In the after-hold the flooring and a portion of the lower strake of the thick strakes were removed on both sides of the ship. Scuttles were cut to allow access beneath the floors of both magazines, and a portion of the thick strake and of the lead lining covering the ceiling was removed. Scuttles were also cut in the floors of both bread-rooms abaft the magazines, and the sheathing partly removed. The shaft-alley was examined, and its after part found to be filled in solid, while in its remaining portion the bilge was accessible without the necessity for cutting.

By means of these openings we were enabled to see that the ceiling and hanging-knees, clamps, etc., were extensively decayed all along the berth-deck. This was particularly the case in the starboard steerage, opposite the galley on the port side, and in the sick-bay. The decayed wood was filled with the mycelium of fungous growths, which appeared also on the inner side of the outer planking. Behind the locker, on the port side, when it was removed, was found a large quantity of partially decomposed refuse. A sink for emptying slops opened outboard from this locality and was surrounded by decayed wood. A hose-reel also hung near by. Each opening gave exit to foul air of offensive odor. This region is immediately above the port coal-bunker, and here four cases of yellow fever, all occurring during the first outbreak, were billeted. One case, occurring during the second outbreak, was billeted on the starboard side, exactly opposite, and one near the galley, localities where decayed wood was found to be particularly abundant.

In that portion of the fore-hold allotted to general stores and paymaster's stores, the flooring, capping to the main keelson, and the keelson itself, the frames, filling timbers and water-tight bulkhead were extensively decayed. The spaces between the frames in this locality were comparatively free from accumulations. A careful examination of all parts of the fore-hold proper, of the spaces between the frames and beneath the water-tanks, disclosed nothing worthy of note. On cutting through the floors of the shell-rooms a quantity of offensive air escaped. A considerable deposit of filth was here found in the bilge, next to the main keelson. On the port side a mass of nearly solid matter, consisting largely of bacteria, adhered to the inner side of the sister keelson and the angle between it and the bilge. Under the coal-bunkers nothing noteworthy, besides a quantity of coal-dust which had sifted through the floor, and which appeared to have been there for a long time, was observed.

Below the plates of the fire-room there were about three inches of solid ice, and ice was standing upon the plates themselves. It was not possible to examine the parts under the boilers and engine-room. The shaft-alley and bilge in this part of the ship were free from considerable accumulations, and in good order. In the after coal-bunker on the port side a quantity of fire-wood, said to have been taken on board in the United States, was stowed; otherwise the bunkers were empty. In the after hold, on both sides, two of the filling timbers were found to have been cut off square with the molding edge, thus leaving a sort of dam for the retention of whatever matter might get into the spaces between the frames. On the star-

board side one of these spaces was found to be completely filled with a soft mass, of intolerably offensive odor, which seemed to consist chiefly of beans in all stages of decay; the other space was equally full of sponge, clothing, chips and other refuse, more or less decomposed. The stench from these deposits was such as to drive the workmen on deck.

Between other frames on both sides were masses of bacterial growth similar to that found in the forward shell-room; and on the port side, in the *culs de sac* corresponding to those containing the beans and refuse on the starboard side, was found a quantity of unrecognizable decomposing organic matter. It was directly above this hold that three cases of yellow fever occurred during the first outbreak. Two were midshipmen, swinging one on each side of the hatch; the other an assistant engineer, occupying the adjoining stateroom on the starboard side. Two of the three cases were fatal.

Under the flooring of the magazines was a great accumulation of decomposing chips and auger-dust, emitting a foul odor, and evidently left there when the ship was built. The spaces between the frames were free from noteworthy deposit. Under the lead lining the sheathing was entirely rotten, and blackened as if the wood had been charred, and in this rotten wood dead rats and their nests were found. The thick strakes and ceiling were badly decayed. On cutting through the bread-room floors, confined air of offensive odor escaped. A second floor had here been laid above the original floor, and between the two was a confined space about three inches deep, from which living and active flies crawled out. It is plain that, although ice had long been standing in the fire-room, this space had not been sufficiently chilled to kill the flies. The tin lining to these bread-rooms had not been carried entirely into the angle between the deck above and the ceiling, but formed with these a triangular space, within which fungous growths were found.

Owing to the fact that the lower outlets of the spaces between the frames, which were intended to open into the bilge, were, in the *Plymouth*, closed by covering boards, these spaces throughout the ship were converted into reservoirs for confined air. Other confined-air spaces existed under the limber-boards in the fore-hold, under the floors of the coal-bunkers and of the forward shell-rooms, below the after magazines and bread-rooms, and behind the tin sheathing at the outer angles of the latter.

These spaces, as is shown by the presence of the living flies, are so protected from external atmospheric changes as to be practically unaffected by either heat or cold, and have probably not been reached by any of the disinfecting agents heretofore employed. The same observation applies also to the interior parts of the timbers, which are nevertheless found to be far gone in decomposition.

We are of the opinion that the various deposits of decomposing organic matter and the quantity of decayed wood above described are closely connected with the development of yellow fever on board of the *Plymouth*.

Numerous specimens and a plan of the ship are forwarded herewith by way of illustration. The specimens include portions of rotten wood, showing the fungous of dry-rot in mycelium from various

parts of the ship, and the different deposits above referred to. The significance of these growths consists in the evidence which they afford that the condition of the ship was favorable to the development of low forms of organic life, which have not been destroyed by the disinfecting agents hitherto employed.

After completing the examination into the condition of the ship herself at Portsmouth, the board continued the investigation at Boston so as to determine with certainty whether all of the clothing and stores, which were suspected to have been among the fomites of the infection, had also been exposed to a freezing temperature. A careful inquiry in regard to this point showed that all the provisions, clothing and stores had been taken out of the ship and placed in an open shed situated in an exposed part of the Boston navy-yard, and had remained there for about one month—from January 8 to February 12, 1879. As shown by the record of temperature already quoted, taken from the log-book of the navy-yard, the mercury during this period was frequently below 32° Fah., the average temperature having been 28° Fah. on the deck of the *Plymouth*, hauled up in the dry-dock.

Subsequently the clothing, packed in bales covered with waterproof envelopes, the beef and pork in barrels, the boots and shoes in boxes, and the small stores were again returned on board. The clothing in actual use by the crew, and the blankets and mattresses which had been sent with the men on board the *Wabash*, were brought back with them on their return to the *Plymouth* on the 12th of February. It is not recorded that these articles were exposed to the same degree of cold as the rest of the clothing, but Surgeon Woolverton states that "the men's bedding was frequently aired during the winter, and once at least the fact is noted in the ship's log, with a temperature of 24° Fah. Many of the men availed themselves of the opportunity to have their blankets washed in Boston."*

These stores were still in the ship on her return in March, after the recurrence of fever on board, and were not removed from her until February, 1880, when they were transferred to the paymaster's store-rooms at the navy-yard at Portsmouth, N. H., for the purpose of being again exposed to the action of cold. The navigation and engineer's stores were exposed to a dry heat of 260° Fah., in an oven constructed for baking "cores." A sickening odor is said to have been exhaled from the flags and signals when heated.

It is a circumstance worthy of being particularly noted that many of these stores bore the mark "Rio Janeiro," and had been returned from the naval store-house at that place. Some among them, such as the glass jars containing pickles, etc., were packed in straw, and contained in loosely covered boxes, receptacles well adapted to retaining infection.

The island of Enchados, on which the naval store-house at Rio Janeiro is situated, has long been regarded as a thoroughly infected place, and has been so reported by medical officers of the Navy.†

* "Yellow Fever on the *Plymouth*," Hyg. and Med. Reports, 1879, p. 696; and THE SANITARIAN, *loc. cit.*

† Report of Dr. Green, U. S. N., on the medical topography of Rio de Janeiro, Sanitary and Medical Reports, 1873–'74, Bureau of Medicine, Navy Department, p. 753.

It thus appears that all ordinary and such unusual precautions as suggested themselves were taken to prevent a recurrence of the disease; the cause of which, nevertheless, remained on board, having successfully resisted both sulphurous acid and a degree of cold below the freezing point. Whether the sulphurous acid vapor penetrated to every recess of the ship is doubtful, there being no evidence attainable bearing upon this point. The examination of the ship already described opened up many parts which must have been effectually protected against the freezing temperature recorded. So that, if it be granted that the yellow fever poison was actually imported into the *Plymouth*, and that it (the poison) is endowed with the power of lying dormant under conditions unfavorable to its development without losing its potential vitality, we are of the opinion that the precautionary measures adopted in the *Plymouth*, energetic and well-intentioned as they were, were not sufficient to insure the destruction of the cause of the disease. Further investigation and experiments, which will be detailed in a subsequent part of this report, upon the application of disinfecting agents, have, moreover, confirmed and strengthened the opinion expressed in our preliminary report to the Surgeon-General, that extensive decay in the woodwork of a ship increases vastly both her susceptibility to infection and the difficulty of removing disease by disinfection. In the *Plymouth* decay began early and progressed rapidly, as has been already shown, partly because of the quantity of white oak used in her construction, and partly because of the sealing up of her frame spaces, and the numerous dark and confined boxes into which the system of flooring and bulkheading followed divided her interior, as will appear more clearly when the subject of the prevention of yellow fever comes to be considered.

The localities from which it is most probable that the disease was imported are St. Thomas and the island of Enchados. Coal was taken on board at the former place, from an open shed, and yellow fever has been so often traced to St. Thomas as a starting point, that it must always lie under particular suspicion. The island of Enchados was doubtless infected at the time that the stores above referred to were taken thence, but the time which had elapsed since their reception into the *Plymouth*, and before the outbreak of this disease, renders it a less probable source of infection than St. Thomas. We have found no direct evidence bearing upon this point.

The *Plymouth* is by no means the first ship of which it is recorded that yellow fever became epidemic on board after it had been supposed that thorough disinfection had been practiced, and before she had touched at any port within the yellow fever zone.* Her experience occurred, however, at a time when the attention of the medical profession and of the public was directed particularly toward the natural history of yellow fever, and has furnished the text for arguments upon many of the questions which are still subjects of controversy among those especially interested in the disease.

* * * * * * * *

Measures for *the prevention* of yellow fever in men-of-war should

* See, for example, the histories of the United States ships *General Greene* (1800), *Enterprise* (1825), and the British ship *L'Eclair* (1845), reported by La Roche, vol. ii., p. 425 *et seq.*

begin with the very construction of the ships, by securing as free access of light and air as is possible to every recess of their hulls. Bearing in mind the fact that the dry-rot fungus flourishes only in dark, damp and confined spaces, and remembering the heavy annual pecuniary loss resulting from its ravages, measures calculated to interfere with its growth seem to us to need no argument for their adoption.* Such measures are—

1st. Free passage for air through each frame space, open to the bilge below, and on the spar-deck just below the hammock-rail. Filling chocks should be scored at the sides, and the fillings around air-ports bored through, the holes to be not less than one and one-half inches diameter.† In the *Alliance* a few of the frame-spaces were ventilated by openings on the spar-deck; in the *Galena* we are informed that most of them are, and in the *Lancaster*, now under construction at Portsmouth, N. H., this requirement is fully met. Such a construction as has characterized many naval ships (*Svatara, Trenton, Monongahela, Tennessee*, for example) whereby the frame-spaces were provided with openings only upon the berth-deck, or with no openings at all, is particularly favorable to the production of dry-rot, to the destruction of timber, to the injury of health, and to the propagation and preservation of the yellow-fever poison.

2d. Scuttles or manhole plates in the floors of all store-rooms, shell-rooms and magazines, so that the skin of the ship, bilges and bilge-strakes may be made everywhere easily accessible.

3d. The avoidance of all confined air-spaces between bulkheads and the skin of the ship, and behind tin, lead or zinc linings.

4th. The use of as large air-ports as possible, and the admission of as much daylight as possible into the berth-deck space.

5th. The introduction of ventilators, such as those in the *Richmond* and *Lancaster*, into all vessels hereafter constructed. This method of ventilation has an especial advantage, beyond the promotion of dryness and constant change in the air below decks, in that its pipes can be utilized for the introduction of disinfecting vapors to all parts of the ship whenever it becomes necessary to use them.

6th. The maintenance of dry decks below the water-line, and of dry bilges, both by the use of subsidiary drying-pumps and by discontinuance of the practice of wetting the gun and berth decks.

* * * * * * * *

When, either because of the neglect of proper precautions or in spite of them, yellow fever has obtained a footing within a naval vessel, it becomes a matter of the utmost importance to know what measures may reasonably be relied upon to check the disease and to prevent its recurrence.

For this purpose we are of the opinion that the use of carbolic acid, chlorine and its compounds, sulphate of iron, nitrate of lead,

---

* "How to keep out water and how to get in air are the two great problems of marine sanitary science."—A. L. Gihon in Rep. Am. Pub. Health Association. Vol. iii, p. 89.

† See in this connection a valuable paper by Staff-Surgeon John Denis Macdonald, R. N., in Stat. Rep. on Health of the (British) Navy, 1867.

and chemical disinfectants generally, is, however effectual in destroying odors, of very doubtful efficacy in destroying the germs of disease.

* * * * * * * *

Live steam has been admitted to the interior of ships of war as a disinfectant against yellow fever, and with success.

Disinfection by baking has been recommended again and again for quarantine stations, and is not used extensively at this time, not because of any want of faith in its efficacy, but because of the injury that would result to the cargoes of the ships. As already set forth, the navigation and some other stores of the *Plymouth* were baked at Portsmouth, in the oven used for baking cores, with a view to their disinfection. The temperature was raised to about 260° Fah.

Subsequent reflection and investigation have confirmed us in the opinion expressed in our preliminary report, dated March 10, 1880, (comprehended in this report as follows): that the best prospect of success in attempts to destroy the poison of yellow fever, when once it has become epidemic in the navy, is afforded by the use of a gas or vapor at a high temperature. In the hope that it would be possible to combine the advantages of a chemical septicide of known power with those of a high temperature, we then recommended that experiments be instituted upon sulphurous anhydride (sulphurous-acid gas) as to the practicability of introducing it into every part of a vessel, and of maintaining it at a temperature approaching 300° Fah., which we believe to be sufficient to destroy every living thing that it reaches.

Experiments have accordingly been begun and are still in progress, directed to the settlement of the following questions:

1. Can sulphurous anhydride be employed at a high temperature in the interior of a ship without serious injury to the apparatus employed or to the metallic surfaces exposed to its action?

2. Can it be introduced in sufficient quantities to reach every part of the ship, and maintained at a temperature approaching 300° Fah.?

1st. Sulphurous anhydride was generated by the action of sulphuric acid upon copper in a glass retort, washed in a Wolff's bottle, dried by passing it through calcium chloride, and heated as it passed through a glass tube coiled upon itself in a spiral of four turns; thence it passed into a flask containing strips of copper and bits of iron wire, and provided with a thermometer. In the first experiment the glass coil was heated by immersion in olive oil raised to 180° C. (356° Fah.) No effect upon the copper or iron followed. In following experiments the glass coil was heated directly by a Bunsen's burner, and maintained at a red heat for one hour and twenty minutes, until, indeed, the glass coil was melted so as to lose its form. The thermometer in the flask showed an increase of only 12° C. (31.6° Fah). After boiling the copper and iron wire thus exposed in distilled water, the filtered liquid gave a very faint reaction with baric chloride, showing that sulphuric acid had indeed been formed, but in so small quantity as to be probably harmless to the engine of the ship, or to the metal of the super-heater.

2d. The same experiment was repeated with the omission of the calcium chloride. A superheater, made of brass tubing, turned into

a close double coil, and exposing ten feet of tubing to the heat of the lamp, was substituted for the glass coil. The pressure of the gas generated in the retort being insufficient to send it through the entire apparatus, an aspirator was attached to its outlet tube. Gas was passed through for two hours and ten minutes, but notwithstanding the increased surface of the metallic superheater, the thermometer in the reception flask (which represents the hold of the ship) showed a rise of only 68° F., a less heat than that which it was desired to produce. No immediate effect upon the copper strips and iron wire in the flask followed, but after forty-eight hours both were found to be corroded and coated superficially with sulphates.

At the temperature obtained therefore (about 130° F.), dry sulphurous anhydride appears not to injure metallic substances with which it may come into contact. If the gas be moist, however, corrosion will follow in time from the slow conversion of sulphurous anhydride into sulphuric acid in the presence of the vapor of water. There is no theoretical reason for supposing that this conversion will occur more rapidly at the higher temperature of 250° to 300° F., which it is desired to reach, than at 130° F., but an important practical inference from these experiments is the fact that there will probably be some difficulty in reaching the high temperature desired with a gas of so high specific heat as sulphurous anhydride. If the gas can be delivered at the required temperature, however, its high specific heat will render it much less difficult to maintain the temperature in all parts of the ship than would be the case if another gas of lower specific heat should be made use of.

To test the practicability of this part of our recommendation, we proposed to repeat the experiment upon a larger scale, using liquefied sulphurous anhydride in tanks, and so avoiding the necessity for the furnace and blower suggested in our preliminary report. To this end we have arranged with a New York firm for the necessary supply of the liquefied gas, and have procured self-registering thermometers of high range to be placed in the different parts of the ship or apartment to be experimented upon. Unexpected and vexatious delays, arising from a breakdown in the condensing apparatus, have up to this time prevented the firm with which we have contracted from furnishing the liquefied gas, and this final experiment, which we regard as a necessary preliminary to action upon our recommendation, remains yet to be tried.

Should it be found to be practicable to introduce sulphurous anhydride into every part of a ship, and to maintain it within her hold at a temperature of, or exceeding, 250° F., its use on ship-board will present no very serious practical difficulties. Since the gas is condensed under a pressure not exceeding three atmospheres, it can be safely stored and shipped in soda-water tanks, and will afford the necessary pressure by its own vaporization. Proper superheaters, consisting of a double coil of metallic tubing, somewhat similar to the Herreshoff boiler, may be kept on hand at suitable points, or shipped when required. No other apparatus besides a supply of jointed pipe for the conduction of the heated gas to different parts of the ship, and of self-registering thermometers, will be required. The crew and stores of a ship infected with yellow fever having been

landed, and every part made as accessible as possible, the conducting tubes should be led fore and aft, as recommended in our preliminary report, the hatches closed, and the hot gas delivered from the spar-deck for such a length of time as experiment shall show to be necessary to the maintenance of a temperature of 250° F. throughout. Should it not be considered advisable to establish a well-appointed disinfecting station, which would doubtless be the best plan to adopt, we conceive that disinfection might thus be effected in ships while still on their stations.

The conclusions to be drawn from the statements of this report are sufficiently obvious, and may be summed up in a few words.

In the first place, we find lying at the very root of the evil described, the faulty construction, in a sanitary sense, of the ship herself. Built of materials not protected against the causes of dry rot, and containing many places impossible to be exposed to the benign influences of air and light, she seems to have rapidly degenerated almost from the day of her launching into premature decay. In such a ship the sound condition of the vessel and of the crew she carries are alike imperiled. In her inaccessible recesses masses of organic matter unavoidably accumulate and remain putrescent, unseen, unsuspected, but constantly poisoning the air and inviting disease.

The second consideration which presents itself is that she was provided with stores brought from a place long known to be dangerously infected with the poison of yellow fever. Many of the packages examined by the Board bore the mark of the naval store-house on the isle of Enchados in the harbor of Rio de Janeiro, where many fatal cases of yellow fever have been engendered. Some of these packages were of a nature well calculated to hold and carry the germs of the disease even through a cold climate.

The third point to be noted is that just before the appearance of the fever on board, the *Plymouth* had taken a great quantity of coal from St. Thomas, a dreaded source of yellow fever, and where the disease was prevailing at the time.

From one or both of these causes of infection came the germ or seed which found a most congenial soil for its fructification in the decayed ship, which had been cruising for years in the yellow fever zone, and which contained beneath the flooring of her holds and store-rooms the putrefying materials which are almost invariably found associated with outbreaks of this disease.

Under these highly favorable conditions the fever naturally became epidemic, as the flame follows the spark falling among inflammable materials.

Once lodged in such a nidus it is easy to understand how difficult it would be to destroy these germs by methods of disinfection ordinarily efficient.

Finally, at the risk of prolixity and tiresome repetition, the Board would earnestly call attention to the important lesson to be learned from the experience with the *Plymouth*.

The ships of the navy, to be safe from epidemic disease, must be built of timber completely seasoned and prepared by some of the processes which have been proved to be successful, to resist such ex-

tensive decay as is to be found in nearly all of our vessels of recent construction.

They should be provided with a system of ventilation which will supply fresh air not only to the inhabited places of the vessel, but also to the recesses and small divisions of the lowest parts of the ship.

A plan of ventilation like that built into the structure of the *Lancaster* will also enable gaseous disinfectants to be introduced into the very places where the dangerous impurities spoken of are most apt to accumulate.

Every ship should be given as much light within as circumstances will permit, as an additional and powerful protective against the insidious dry rot.

Some ready means of destroying the germs of disease, always and everywhere available, should be a part of the outfit of all our ships.

The careful experiments now being made by the Bureau of Medicine and Surgery in connection with this subject go far to establish the practical usefulness of the method of disinfecting ships which has been described.

Very respectfully, &c.,

R. C. DEAN, *Medical Director United States Navy, President of Board.*

THEODORE D. WILSON, *Naval Constructor United States Navy, Member of Board.*

J. H. KIDDER, *Surgeon United States Navy, Member of Board.*

———o———

Tobacco.—The following, from one of our daily papers, gives an inkling as to how the tobacco habit appears to some people:

Complaint has been made by women, that as they go along the sidewalk they are defiled by spittle and spent quids of tobacco from the windows above. They who have observed the habits of tobacco chewers have noticed that they spit and throw quids from windows without any thought of the passers. This is strictly logical. He who makes his mouth nasty cannot have any sensation at nastiness anywhere. Logically, a person cannot have any higher regard for cleanliness in outward objects, whether person or things, than he has for his own mouth. He that makes himself nasty, is, by the force of logic, led to defile all others. The tobacco chewer is inevitably demoralized in all his manners—*Dental Register.*

MENU.

The Dinner Hour.—It is related of Cambaceres that Napoleon kept his dinner waiting half an hour, and in despair he sent for his cook, and in true military phraseology, exclaimed, "Henri, save the entremets; the *entrées* are annihilated!" The late Dr. Kitchener, whose name fully bore out his devotion to the culinary art, piqued himself upon his punctuality, and was in the habit of having the following motto written over his sideboard, "Come at seven, go at eleven." Theodore Hook, who always liked to get into what are called the short hours, added the word "it" to the above, and great was the surprise of the worthy doctor when he found that by the alteration the notice read as follows:

"Come at seven, go it at eleven."

—*The Caterer.*

How to Cook Vegetables.—It is often observed that a meal from vegetables is not satisfying; but it frequently happens that the persons who thus object do not know even how to boil a vegetable. The rule is simple, and should never be forgotten. Every kind of vegetable intended to be served whole should, when put to boil, be placed at once in boiling water; and this applies especially to potatoes and vegetables from which the outer cover has been removed. Now it often happens that potatoes, etc., are, to save time, placed in cold water and left to boil gradually. It is just this which allows the nutritious matter to escape, and renders the meal unsatisfying. When, on the contrary, the water boils from the moment that the vegetable is immersed in it, the albumen is partially coagulated near the surface, and serves to retain the virtue of the vegetable. The reverse is, of course, the rule for making soup, or any dish from which the water will not be drained. By placing the vegetables in cold water the albumen is slowly dissolved, and actually mixes with the water—a process most necessary for the production of nutritious soup.—*The Caterer.*

To Cook a Turnip is so simple a matter that there should be very little said about it. Generally speaking, however, this wholesome vegetable is presented in a washed-out state, so that it is quite seldom we discover its real flavor. Many will, perhaps, say that the real full flavor of the turnip is too strong, and this may be an argument in favor of the reduction of the flavor in the process of cooking. *De gustibus non est disputandum*, and those who cannot endure the full flavor of this root will have no trouble in subduing it. But it should be known that the saccharine and gummy constituents that are removed, and therefore lost, in the customary modes of cooking, are the most nutritive portion, and communicate to the dish when it is cooked, on what we may call "conservative" principles, a far finer flavor than the majority of people have any idea of. That we may be understood, we will ask the reader to cook two turnips in two different ways. The first is to be peeled and sliced, and left to soak in cold water for an hour or more. The slices are to be boiled until quite tender, and

then are to be drained, and nicely mashed with butter. This is the most common method of cooking, and it has the demerit of washing the gum and the sugar, and the other finer constituents of the root, and consequently the flavor is very much reduced. The other root is to be washed quite clean; but it is not to be peeled, or cut, or soaked. Boil it whole, in its "jacket." It will take twice as long to cook as the one that was cut. When, by trying it with a fork, you find it quite tender, take it up, peel it, press it moderately, and mash it with butter. You will be surprised at the difference. Instead of being, as, perhaps, you will expect, "strong," "rank," or "bitter," it will be deliciously full-flavored, and will contain all the nourishment that was in it before it was cooked.—*The Caterer.*

Mark Twain's Recipe for German Coffee.—Take a barrel of water and bring it to a boil; rub a chicory-berry against a coffee-berry, then convey the former into the water. Continue the boiling and evaporation until the intensity of the flavor and aroma of the coffee and chicory has been diminished to a proper degree; then set aside to cool. Now unharness the remains of a once cow from the plow, insert them in a hydraulic press, and, when you shall have acquired a teaspoonful of that pale-blue juice which a German superstition regards as milk, modify the malignity of its strength in a bucket of tepid water, and bring up the breakfast. Mix the beverage in a cold cup, partake with moderation, and keep a wet rag round your head, to guard against over-excitement.

Hasty Pudding.—Put into a farina boiler a quart of milk or water, and when it is brought to the boiling point, stir in slowly about five tablespoonfuls of Heckers' Cracked Wheat, and let it boil an hour and a half or two hours, stirring occasionally. By thus boiling it in a separate vessel, not in immediate contact with the fire, the risk of burning is obviated, without requiring constant stirring. Soaking the Cracked Wheat over night in the proper quantity of milk or water, and boiling as above, is considered a decided advantage. Serve with wine or other sauce, or sugar; dyspeptics, however, will probably find molasses the most wholesome condiment.

Mark Twain's Recipe for New England Pie.—To make this excellent breakfast dish, proceed as follows: Take a sufficiency of water and a sufficiency of flour and construct a bullet-proof dough. Work this into the form of a disk, with the edges turned up some three-fourths of an inch. Toughen and kiln-dry it a couple of days in a mild but unvarying temperature. Construct a cover for this redoubt in the same way and of the same material. Fill with stewed dried apples; aggravate with cloves, lemon-peel and slabs of citron; add two portions of New Orleans sugar; then solder on the lid and set in a safe place till it petrifies. Serve cold at breakfast, and invite your enemy.

Cottage Pudding.—Take one cup sweet milk, one teaspoonful butter, one cup sugar, three and a half cups of Hecker's self-raising flour. Bake in an earthen dish; serve with sauce.

Jumbles.—One pound of sugar, three-quarters of a pound of butter, two eggs, two pounds of Hecker's self-raising flour, half a pint of milk or cold water. Bake immediately.

Editor's Table.

The American Public Health Association.

Albany, Nov. 6, 1880.

To the Editor of THE SANITARIAN: The announcement of the Eighth Annual Meeting of the American Public Health Association, to be held at New Orleans the second week in December, is worthy of special attention, for the Queen City of the Great Valley has become the battle-field of Hygiene. There, also, and in the chief cities of our Southern Coast and of the great river and the lakes, are found to-day a great number of enlightened and tireless workers in the public health service.

Eight years ago last September the Public Health Association was organized for a studious and noiseless kind of work that seemed necessary as a foundation for the general effort and widespread interest whose outcome would be manifested in the foundation of State and National methods of sanitary improvement, and in the recognition of health and the protection of life, as essential conditions of civilization and national felicity. This first purpose and the highest hopes of the founders of the Association are being realized. The twenty-three States which have organized a central sanitary service or State Board; the National Board of Health; the awakening the medical profession and the educated classes generally to value and obligations of protection, medical and scientific service, which we call public hygiene, already are realizations of much desired results. Yet we are only upon the threshold of the greater future, when the safeguards which hygiene will prepare throughout the Valley and Gulf States, as well as at the North, will present to the world our crowded pathways and marts of commerce unvexed by pestilent diseases and the barriers and fears they induce.

In New Orleans, as in Nashville, Chicago, New York, Boston, Philadelphia and Baltimore, there is an abiding faith in the facts of sanitary science. The commercial wealth and enterprise of our chief cities are ready to do the bidding of sound leaders or counselors in municipal and port sanitation, and our States are not slow in following good examples and counsels. The sanitarians and sanitary engineers who projected the work of the Public Health Association now find their greatest problems in process of solution at the South, and to-day the simple and effectual system of sanitary sewerage and flushing devised by COL. WARING, and promptly carried out by Memphis, is a practical lesson to the cities of all countries; for it is a system of cleansing and public economy. New Orleans is the field in which the greatest conquests of sanitary engineering and practice will be witnessed, and the workers in that field will greet their colleagues from the North and West at this great meeting there in December. Let all who can be there, and let the Nation as well as States bear in mind that the prosperity and future of the Republic are closely dependent upon the public health of the great South and its chief cities.

ELISHA HARRIS, M.D.

The next meeting of the American Public Health Association, which takes place at New Orleans, Dec. 7th to 10th, will be a very important, and promises to be a very interesting one.

The attendance will be large from the Mississippi Valley, and it is to be hoped that there will also be a large attendance of our Eastern sanitarians, who cannot well afford to be absent if they would make themselves familiar with most important interests. The list of papers to be presented is, of course, not yet complete, but we give below those which have been reported to the Secretary up to the date of this writing. When it is remembered that, in addition to these papers, there is to be a discussion on the best means of stopping the spread of contagious disease, it will be seen that the programme comprehends subjects of interest to every community, and the discussions ought to, and doubtless will, attract general attention. But besides these general subjects, the report of the Advisory Committee on National Sanitary Legislation, and the action of the Association thereon, will be looked for with special interest, and the more by reason of the unfortunate attitude which at present obtains between the National Board of Health and the State Board of Louisiana. The action of the Association at its last two annual meetings, at Richmond in 1878, and at Nashville last year, exercised a very strong and salutary influence on Congressional action. And it is very desirable that the same wise councils and conservative action may continue to prevail. And to this end it well behooves the Executive and Advisory Committees to wholly divest themselves of every vestige of local influence, and to regard the greatest good for the greatest number as the only sound basis of action.

LIST OF PAPERS PROMISED.

Dr. Gustavus Devron, New Orleans, La., on Abattoirs.

Mr. Edward Fenner, New Orleans, La., Auxiliary Sanitary Associations.

Dr. D. C. Holliday, New Orleans, La., Dengue.

Dr. E. M. Hunt, Metuchen, N. J., Epidemics.

Dr. T. J. Turner, U. S. Navy, Sanitation of Emigrant Ships.

Mr. James Gallatin, President of the Sanitary Reform Society of New York, Tenement House Reform in the City of New York.

Col. George E. Waring, Jun., Newport, R. I., The Stormwater Question in Relation to Sewerage.

Dr. B. F. Gibbs, U. S. Navy, A New Method of Experimental Investigation into the Causes of Yellow Fever upon the Basis of Similar Densities.

Dr. J. M. Keating, Memphis, Tenn., The Sanitary Relations of the Mississippi Valley.

Dr. G. B. Thornton, Memphis, Tenn., The Sanitation of Memphis.

Dr. G. W. Nall, Memphis, Tenn., History of Camp Joe Williams in 1878.

Dr. H. B. Baker, Lansing, Michigan, Relations of Schools to Diphtheria and Similar Diseases.

Hon. John Eaton, Commissioner of Education, Address on Sanitation and Education.

Dr. J. G. Thomas, Savannah, Ga., Dengue.

Dr. F. Peyre Porcher, Charleston, S. C., Dengue.

Dr. A. N. Bell, Garden City, N. Y., The Relations of Certain Filth Diseases to Cold Weather.

Dr. A. L. Gihon, U. S. Navy, Report of Committee on Plan for the Prevention of the Spread of Venereal Disease.

Dr. Jos. R. Smith, U. S. Army, Texas Cattle Fever.

Dr. W. H. Elliott, Savannah, Ga., Yellow Fever in Savannah.

Dr. Jerome Cochran, Mobile, Ala., Problems of Yellow Fever and Quarantine.

Dr. T. S. Scales, Mobile, Ala., Municipal Sanitation as Practiced in Mobile for Preventing the Spread of Yellow Fever.

Dr. J. H. Pope, Marshall, Texas, Sanitary Condition in Western Texas.

Dr. O. W. Wight, Milwaukee, Wis., Management of Contagious and Infectious Diseases in Milwaukee.

Dr. S. E. Chaillé, New Orleans, La., Conclusions with Regard to Yellow Fever in Cuba.

Mr. J. B. Cook, Memphis, Tenn., Healthy Homes, and How to Make Them.

O. C. DeWolf, Chicago, Ill., The Results of Attempting to Check the Spread of Small-pox in Chicago.

Report of the Advisory Committee on National Sanitary Legislation.

Special Meeting of Sanitary Council of Miss. Valley.

Members of the Sanitary Council representing five different States having requested me to call a special meeting of the Council, in accordance with Section V. of our Constitution, I hereby call a *Special Meeting of the Sanitary Council of the Mississippi Valley*, to convene at St. Charles Hotel, in New Orleans, on the 7th day of December, 1880.

R. C. KEDZIE, *Prest. of Sanitary Council of Miss. Valley.*

The Associated Railroads of Virginia and the Carolinas comprehend points of connection all the way from Boston to New Orleans, and offer unusual comfort and facilities for all who would attend these conventions.

Importance of Pure Soaps.

Brooklyn, Nov. 15, 1880.

To the Editor of THE SANITARIAN: Permit me to express my gratification with your recent articles on the importance of pure soap, and for calling my attention in particular to "Higgins' German Laundry Soap," which I have recently adopted in my household to very great advantage. In the general tendency in almost every branch of trade to cheapen family necessities, soap seems to have possessed singular facilities, insomuch that many housekeepers, as well as some unprin-

cipled or ignorant manufacturers, appear to consider any kind of compost called *grease*, good soap stock, and this is commonly treated with an excess of alkali, rendering a detergent, it may be, but one fraught with destructive qualities to clothing, and highly irritating properties to the skin. As physicians, we all know the mischief of impure soaps, and above all, to the tender skin of children. But the mischief is by no means confined to children. Few practitioners fail to recognize in "*salt-rheum*" a very common and afflicting result from the use of impure or over-alkaline soaps by washerwomen. But the worst results are to be found among the children of the poor. The toilet soap of the poor is the household soap; not that I mean to suggest by this that toilet soaps are in general any more pure than laundry soaps, for they are not, but that the more common and most painful results of impure soap in general are to be found among children. With somewhat extensive opportunities for observing skin diseases among children, I am fully persuaded that a very large proportion of them are caused by impure soaps.

I sincerely trust THE SANITARIAN will follow up the subject, for it is one to which the public have given far too little attention.

Truly yours, JEROME WALKER, M.D.

Cesspool Poisoning.—*New Haven, Conn., Nov.* 1, 1880. To the Editor of THE SANITARIAN. In the Nov. number, in the review of the proceedings of the Connecticut Medical Society, you refer to several cases of sickness caused, as believed, by the proximity of a cesspool to the well of a house, etc., reported by me as County Reporter for New Haven Co. Will you kindly say in your next issue that the cases occurred in the practice of Dr. R. B. Goodyear, of North Haven, and were reported to me by him, instead of occurring in my own practice, as one might think from the wording of the review.

Yours very truly,

W. R. BARTLETT, M.D.

Dayton Board of Health Report for year ending with February, 1880, gives a succinct account of sanitary administration in conflict with an execrable cess-pool privy system, saturating the soil, and filling the houses with dangerous emanations; and as if this were not enough, the common practice of filling low lots with street and alley dirt obtains with a view to new domicilliary foundations, and well water in the midst—all promotive of disease and death. It is scarcely necessary to state that the Health Officer, Dr. Thomas L. Neale, who is alive to all such dangerous, protests against them, as being alike inconsistent with both public economy and public health; and urges an extension of the water supply, which is now insufficient, as among the first necessities for the protection of the health of the people. The whole number of deaths during the year 1879, was, exclusive of 51 still-births, 539. On an estimated popula-

tion of 37,654, 14.31 per 1,000, 240 were of infants and children under 10 years of age, and 146 or 27.12 per cent. from zymotic diseases; 78 from consumption, and 55 from other diseases of the respiratory organs. While the number of deaths is small, *assuming* the estimate population to be correct, the ratio of zymotic diseases, and diseases of the lungs especially, is very large—indicating the general prevalence of unsanitary conditions, so pointedly dwelt upon by the Health Officer.

The whole number of births for the same period was 10,020—returns believed to be accurate—36.91 per 1,000 of population.

Cleveland Health Department Report for 1879, shows the number of deaths from all causes to be 3,038: 17.36 per 1,000 of population—estimated at 175,000. 1,613 were of children under five years of age, and of the total number, 990, or nearly one-third, were from zymotic diseases—the chief of which were diarrhœal diseases, diphtheria, scarlet fever, whooping-cough, croup and typhoid fever. 227 from consumption, and from other diseases of the lungs, 269. Defective drainage and sewerage, stored and surface filth, are the common causes of disease dwelt upon by the health officer, requiring needful appropriations and better civic service.

Births reported during the year, 4,837, believed to be incomplete; still-births, 212.

Aurora Health Report (Annual Reports of City Officers of Aurora, Ill., 1879–80) for 1879, shows the number of deaths to have been 172, on an estimated population of 14,550: 11.82 per 1000. The chief causes were: consumption, 24; other lung diseases, 20; diarrhœal diseases, 11; diphtheria and croup, 12. The Board of Health urges surface cleaning, drainage and sewerage as absolutely necessary, if the authorities would maintain the reputation of the city for healthfulness, as the Board says: "We are slowly but surely poisoning our water-supply by saturating the ground around our wells with the sipage from the privy vaults and cesspools, or from slops and garbage thrown upon the surface, one spot receiving them all—and that spot, in many cases, in close proximity to the well."

Artesian Well Water—Buda-Pesth. The depth of the well is 3,183 feet; daily supply 200,781 gallons; temperature 165° F.; mean increase of temperature 1° F. for every 23 feet. The water is strongly impregnated with carbonic acid, together with some nitrogen and sulphuretted hydrogen; it contains 66 grains of salts per gallon, principally sulphates and carbonates of potash, soda, lime, magnesia, with some chlorides. It resembles the Kaiserbad water at Ofen.

Bathing.—On this subject the *Lancet* offers the following timely remarks: "It is important to recognize that the only virtues of water as used by the bather are two—namely, its value as a cleansing agent, and as a surface stimulant. In this last capacity it simply acts as a medium affecting the temperature of the part to which it is applied, or which is immersed in it. Right views of fact in reference to this matter are important, because there can be no question that some persons overrate the uses of cold water, and run considerable risk in the pursuit of them. Every beneficial action that can be exerted by a bath is secured by simply dipping in the sea, or a very moderate affusion of cold water! Except in cases of high fever, when it is desired to reduce the heat of the body by prolonged contact with cold, a bath of any considerable duration is likely to be injurious. Then, again, it is necessary to recognize the risk of suddenly driving the blood from the surface in upon the organs. The 'plunge,' or 'dip,' or 'shower,' or 'douche,' is intended to produce a momentary depression of the temperature of the surface, in the hope of occasioning a reaction which will bring the blood back to the surface with increased vigor, and almost instantly. If this return does not take place; if, in a word, redness of the skin is not a very rapid consequence of the immersion, it is impossible that the bath can have been useful, and, in nine cases out of ten, when the surface is left white or cold, it does harm. The measure of value is the redness which ensues promptly after the bath, and this reaction should be produced without the aid of much friction, or the bath is not worth taking. The rubbing employed to recover the circulation lost by the bath, would, probably, have done more good without it! Another effect of the bath, when it acts properly, is to stimulate the nervous system, through the vast series of its terminal fibres which are distributed in the skin. In this way, also, the action must be very rapid, or it is not efficacious. Unless the vigor of energy is quickly called out, the agent is useless; and if it produces either drowsiness or depression it acts mischievously, and lowers the power it is intended to stimulate and augment. Bathers should bear these facts in mind, and be warned by them not to trifle with an agency which, if it is not of value, is worse than useless, and can scarcely fail to do harm."

Mortality in the United States, for the four weeks ending September 25, 1880.—*Abstract from National Board of Health Bulletin.*

	Annual rate per 1,000 under 5 years.	Annual rate per 1,000.		Annual rate per 1,000 under 5 years.	Annual rate per 1,000
Portland, Me.	6.5	17.6	Lynchburg, Va.	6.3	14.2
Concord, N. H.	7.4	18.5	Wilmington, N. C.	10.4	23.0
Burlington, Vt.	9.5	14.2	Charleston, S. C.	8.9	26.2
Boston, Mass.	11.9	24.4	Augusta, Ga.	11.1	21.8
Cambridge, Mass.	5.9	16.1	Atlanta, Ga.	6.4	18.6
New Bedford, Mass.	7.1	21.0	Savannah, Ga.	20.1	39.4
Edgartown, Mass	.....	40.3	Jacksonville, Fla.	14.3	26.1
Newburyport, Mass.	12.0	22.2	Mobile, Ala.	8.1	23.7
Marblehead, Mass	7.0	24.4	Selma, Ala.	22.5	29.5
Plymouth, Mass.	7.3	25.7	Natchez, Miss.	5.5	25.9
Lawrence, Mass.	8.3	18.4	New Orleans, La.	8.3	25.5
Lowell, Mass.	16.4	27.6	Morgan City, La.	6.4	25.8
Worcester, Mass.	9.6	22.6	Baton Rouge, La.	16.1	26.9
Lynn, Mass.	8.2	22.4	San Antonia, Tex.	7.6	20.8
Brockton, Mass.	9.3	14.9	Nashville, Tenn.	6.2	19.1
Bridgewater, Mass.	4.9	19.7	Clarksville, Tenn.	3.6	14.4
Chicopee, Mass.	4.8	7.2	Murfreesborough, Tenn.	13.8	20.7
Fitchburgh, Mass.	11.3	19.6	Cincinnati, Ohio.	6.9	16.1
Somerville, Mass.	11.0	18.8	Gallipolis, Ohio.	8.7	14.5
Springfield, Mass.	5.9	17.0	Dayton, Ohio.	7.7	19.0
Providence, R. I.	7.1	16.5	Portsmouth, Ohio.	8.0	19.5
New Haven, Conn.	4.5	15.7	Indianapolis, Ind.	7.2	16.9
Waterbury, Conn.	12.8	21.2	Richmond, Ind.	11.3	25.7
New York, N. Y.	11.1	23.7	Evansville, Ind.	9.5	20.9
Brooklyn, N. Y.	12.0	23.0	Moline, Ill.	4.9	11.4
Yonkers, N. Y.	8.2	18.5	Peoria, Ill.	5.2	13.8
Newburg, N. Y.	6.5	17.4	Aurora, Ill.	2.2	13.2
Cambridge, N. Y.	.....	14.5	Elgin, Ill	7.4	16.3
Seneca Falls, N. Y.	6.5	21.7	Milwaukee, Wis.	11.7	20.5
Port Jarvis, N. Y.	1.3	7.8	Saint Paul, Minn	9.4	16.2
Hudson County, N. J.	8.8	20.4	East Saginaw, Mich.	6.9	14.4
Camden, N. J.	9.1	17.5	Keokuk, Iowa	2.2	8.4
Orange, N. J.	11.0	19.0	Saint Louis, Mo.	7.1	20.0
Plainfield, N. J.	9.8	19.6	Lawrence, Kans	10.0	21.0
Philadelphia, Pa.	5.6	20.4	Omaha, Neb.	5.2	12.1
Pittsburgh, Pa.	9.0	18.5	Salt Lake City, Utah	8.8	15.6
Erie, Pa.	6.9	14.3	San Francisco, Cal.	6.6	18.4
Baltimore, Md.	7.9	19.8	Sacramento, Cal.	1.2	12.1
District of Columbia.	10.1	23.9	Los Angeles, Cal.	10.8	22.7
Norfolk, Va.	11.6	26.2	Vellejo, Cal.		5.4

Diphtheria in New York and Brooklyn.—So far as can be judged by the reports of physicians received by the Boards of Health, diphtheria continues to prevail extensively. Appended will be found comparative tables of deaths from diphtheria in New York and Brooklyn during the past six years, as furnished by the Brooklyn Health Department:

Year.	Brooklyn.		New York.
	Cases.	Deaths.	Deaths.
1874	1,651	580	1,665
1875	2,669	965	2,329
1876	2,329	812	1,750
1877	2,280	778	950
1878	1,744	544	1,007
1879	1,779	689	671
1880	1,470	536	.....
Total	12,922	6,904	8,372

Mortality in Foreign Cities at most recent dates.

Countries.	Places.	Population.	Week ending—	Total Deaths.	Annual rate per 1,000.	Cholera.	Yellow Fever.	Small-pox.	Typhoid and Typhus Fevers.	Other Contagious Diseases.
			1880.							
Canada	Kingston	15,000	Oct. 16	12	39.1	....	....	....	....	....
Do	Montreal	135,000	Oct. 9	61	23.6	....	....	....	1	3
Bermuda	Hamilton	14,867	Oct. 12	1	3.5	....	....	....	....	....
Bahamas	Nassau, N. B.	13,000	Oct. 9	1	4.0	....	1	....	....	....
Cuba	Havana	195,437	Oct. 9	154	41.1	....	12	5	3	....
Trinidad	Port of Spain	30,000	July 24	19	33.0	....	....	....	....	....
Hayti	Port au Prince	30,000	Oct. 6	15	26.1	....	....	....	....	....
Teneriffe	Santa Cruz	16,000	Sept. 4	8	25.2	....	....	....	1	....
Mexico	Matamoras	16,000	Oct. 9	9	29.3	....	....	3	....	....
Brazil	Rio de Janeiro	330,000	Sept. 4	173	27.3	....	....	....	1	3
Do	Pernambuco	126,575	Aug. 8	55	22.7	....	....	5	....	....
Do	Bahia	135,000	July 31	87	33.4	....	....	2	2	....
Ireland	Queenstown	10,000	Oct. 9	7	36.5	....	....	....	4	....
Do	Belfast	230,000	Oct. 9	82	22.4	....	....	....	3	2
Do	Dublin	314,666	Oct. 9	201	32.9	....	....	1	5	27
Do	Londonderry	30,884	Sept. 11	9	15.2	....	....	....	6	....
Scotland	Dundee	155,100	Oct. 2	58	19.5	....	....	....	....	1
Do	Glasgow	589,598	Oct. 2	199	17.6	....	....	....	24	18
Do	Leith	58,479	Oct. 9	19	16.9	....	....	....	....	2
England	London	3,664,169	Oct. 2	1,353	19.3	....	....	2	15	103
Do	Liverpool	544,056	Oct. 9	319	30.5	....	....	....	6	38
Do	Bristol and Clifton	213,500	Oct. 2	87	21.0	....	....	....	....	3
Do	Bradford	197,196	Oct. 2	96	25.4	....	....	....	....	7
Do	Tunstall	144,549	Oct. 2	106	27.3	....	....	....	....	4
Do	Sheffield	304,938	Oct. 2	106	18.1	....	....	....	....	....
Do	Newcastle	148,000	Sept. 25	80	27.9	....	....	....	1	3
Wales	Cardiff	82,364	Oct. 9	25	15.7	....	....	....	1	3
France	Paris	1,988,806	Sept. 30	906	23.9	....	....	23	41	63
Do	Havre	92,068	Sept. 11	90	50.9	....	....	....	....	....
Do	Lyons	342,815	Sept. 25	153	23.6	....	....	....	....	....
Do	Rouen	104,902	Oct. 9	50	24.9	....	....	8	11	7
Switzerland	Zurich	22,103	Oct. 2	6	14.3	....	....	....	....	1
Do	Geneva	52,077	Sept. 4	13	13.0	....	....	....	....	....
Holland	Amsterdam	316,952	Sept. 25	175	28.8	....	....	....	10	5
Do	Rotterdam	150,378	Oct. 2	58	20.1	....	....	....	....	22
Germany	Berlin	1,096,644	Sept. 25	621	29.4	....	....	....	16	76
Do	Barmen	95,000	Oct. 2	27	15.3	....	....	....	1	6
Do	Brunswick	74,000	Oct. 2	33	22.2	....	....	....	3	1
Do	Breslau	276,000	Sept. 25	124	23.4	....	....	....	4	17
Do	Frankfort	130,000	Oct. 2	41	16.5	....	....	....	....	2
Do	Hamburg	400,000	Sept. 18	201	26.2	....	....	....	....	5
Do	Bremen	109,000	Sept. 25	32	15.3	....	....	....	1	2
Do	Cologne	141,639	Oct. 2	19	21.6	....	....	....	....	....
Saxony	Leipsic	150,836	Sept. 25	72	24.8	....	....	....	1	2
Do	Dresden	220,540	Sept. 25	105	24.8	....	....	....	12	11
Do	Chemnitz	92,383	Sept. 25	50	28.4	....	....	....	1	4
Belgium	Antwerp	173,643	Sept. 25	90	27.0	....	....	13	2	3
Do	Brussels	389,022	Oct. 2	172	22.9	....	....	....	7	....
Denmark	Copenhagen	235,254	Sept. 28	130	28.8	....	....	....	2	1
Italy	Venice	141,004	Aug. 7	61	22.5	....	....	2	1	40
Do	Rome	305,161	July 17	200	34.3	....	....	5	5	40
Do	Genoa	185,000	Oct. 9	98	27.7	....	....	....	....	....
Austria	Vienna	746,243	Oct. 2	332	19.7	....	....	6	1	15
Do	Trieste	128,000	Sept. 4	101	41.1	....	....	2	2	....
Roumania	Bucharest	177,646	Sept. 18	96	28.2	....	....	3	7	4
Hungary	Buda-Pesth	344,604	Sept. 25	215	32.6	....	....	6	3	2
Russia	Warsaw	357,169	Sept. 25	194	28.3	....	....	2	....	....
Sweden	Stockholm	169,429	Sept. 18	91	28.9	....	....	....	2	14
Norway	Christiania	116,801	Sept. 18	63	28.1	....	....	....	....	8
Portugal	Oporto	108,346	Sept. 18	91	43.8	....	....	....	3	....
Do	Lisbon	225,152	Sept. 18	158	36.5	....	....	1	9	....
Spain	Seville	138,000	Sept. 19	98	37.0	....	....	1	1	10
Do	Cadiz	65,028	Sept. 25	51	40.9	....	....	....	....	....
India	Calcutta	429,535	Sept. 11	185	22.4	8	....	....	8	1
Egypt	Alexandria	220,000	Sept. 25	191	45.3	....	....	....	....	....
Barbary	Tripoli	20,000	Oct. 2	11	28.7	....	....	....	....	....
Cape Colony	Cape Town	35,000	Sept. 20	21	31.3	....	....	....	....	....
Seychelles Isl's.	Mahé	12,000	Sept. 11	3	13.0	....	....	....	....	....
Japan	Kobe	18,282	Sept. 11	18	51.4	....	....	....	....	....

Literature.

Slight Ailments, as treated of in the book before us,* comprehends most of the ills flesh is heir to—a majority of those for which physicians are called—described and treated of at a time when they are most amenable to treatment. Few physicians have had better opportunities, and it may be safely said none have made better use of them than the author of this work, in acquiring an accurate and comprehensive knowledge of disease. and the most successful means of combatting it. The style of the work is singularly clear and felicitous, and as a review book for advanced students or handbook for young practitioners it has no rival.

Harper's Magazine for November concluded the sixty-first volume, and, taken as a whole, this number is probably the most beautiful and one of the most interesting numbers ever published. It opens with a beautifully illustrated paper on "Saint Cecilia," whose history, real and legendary, is given, with a description of her church in Rome, and a reproduction of the poems relating to St. Cecilia by Dryden, Addison, and Pope, to which is added one by Mme. Emile de Girardin, translated by Z. B. Gustafson. It contains another of those exquisitely illustrated papers by Gibson, entitled "An Autumnal Pastoral," which has been so much and so justly praised for poetic delicacy. The landscape drawings by P. Murphy, illustrating John W. Chadwick's very interesting article, "In Western Massachusetts," represent work which, in artistic quality, is unsurpassed by anything hitherto attempted in descriptive articles of this kind. The same article contains an exquisite ideal portrait of Jonathan Edwards' betrothed, drawn by Mary Hallock Foote, and engraved by Cole. A brief article on "Porcelain Painting" makes clear the distinction between over-glaze and under-glaze work, and the kinds of decoration adapted to them. And a dozen other articles, in which the literary charm is no less prominent than the æsthetic, and abundantly illustrative of the value of this Magazine as a popular educator. The announcement is made that, with the December number, and hereafter, it will be published in London as well as New York,

* On Slight Ailments: their Nature and Treatment. By Lionel S. Beale, M.B., F.R.S., Fellow of the Royal College of Physicians, Professor of the Principles and Practice of Medicine in King's College, London, and Physician to King's College Hospital; lately Professor of Pathological Anatomy, and formerly Professor of Physiology and of General and Morbid Anatomy in King's College. 12mo., pp 353. Philadelphia: Presley Blakiston.

but without in any sense losing its American character. Several new novels and other attractions are promised to begin in the December number, and to be followed by a store of unequaled richness. Now is the time to subscribe. Harper & Brothers, New York.

The Atlantic Monthly, in addition to the characteristic attractions which have given it the post of honor in American periodical literature for the last twenty-five years, promises, among other new features for 1881, a new Serial Story by Miss Elizabeth Stuart Phelps, author of the "Gates Ajar," the "The Silent Partner," "The Story of Avis," etc., which will run through six numbers.

Mr. George P. Lathrop will have a fresh and charming story, extending through three numbers.

Mr. William Henry Bishop, author of "Detmold," will contribute a striking serial story, depicting characteristics and contrasts of New York social life.

Mr. Henry James' Jr., novel will be completed in the early part of the year.

Mr. W. D. Howells, author of "The Undiscovered Country," "The Lady of the Aroostook," etc., will have a new story, running through four or five months, and a long catalogue of other attractions. And the numbers for NOVEMBER AND DECEMBER ARE OFFERED FREE to all subscribers who pay for the Atlantic for 1881 before Dec. 20th. $4.00 a year. Houghton, Osgood & Co., Boston, Mass.

The Mexican Pompeii.—A correspondent of the *World* writes from Mexico as follows: "Charney has discovered what he very properly terms 'the Indian or Mexican Pompeii'—a city buried at least for one thousand years. In my last I mentioned the discovery of a villa near Tulla. That house has now been fully uncovered, and found to contain twenty-five rooms, fifteen staircases and twelve corridors. Attached to it are two cisterns with clay pipes, which were used to convey water to different apartments. Some of the house utensils are of coarse clay, a few porcelain, and one article of glass! Remember, Tollau, the capital of the Toltec Empire, covered not only the present town of Tulla, but the spot where M. Charney discovered the villa, and now he is unearthing near the former building a large palace. Perhaps, during these excavations, he may find historical data that will clear up all mystery with regard to the origin of the first inhabitants of the Western Continent. On the 28th ultimo (August), Charney announced to *Le Trait d'Union*, of this city, merely the discovery of a palace, but made no allusion to any architectural peculiarities. We have, however, heard that the ruins recently unearthed are more distinctly Asiatic in style than any Toltec remains now known. In the course of a

few days we shall receive further particulars. M. Charney also had the good fortune to find the bones of some gigantic animals. These remains are now *en route* to this capital."

Captain Eads' Ship Railway.—The *Scientific American* of November 13th contains two full page illustrations of Captain Eads' proposed railway for transporting ships with their cargo across continents.

Captain Eads claims by his plan to be able to take loaded ships of the largest tonnage from one ocean to the other across the Isthmus of Panama, as readily as can be done by a canal after the Lessup plan, and at a much less cost for engineering construction.

The project is certainly bold and ingenious, and the projector anticipates no serious difficulties in carrying forward his enterprise .The engravings referred to in the *Scientific American* show the proposed construction of not only the railroad, but the appliances for transferring the ships from the water to the rail.

In addition to the large number of engravings, illustrative of engineering works, inventions and new discoveries which appear weekly, the *Scientific American* has, during the past year, devoted considerable space to illustrating and describing leading establishments devoted to different manufacturing industries.

This feature has added very much to the attractiveness and usefulness of the paper. More than fifty of the most important industrial establishments of our country have been illustrated, and the processes of the different manufactures described in its columns. The *Scientific American* has been published for more than thirty-four years by MUNN & Co., 37 Park Row, N. Y., and has attained a larger weekly circulation than all similar papers published in the country. The publishers assure the public that they have not printed less than 50,000 copies a week for several months.

Drainage and Underdrainage in their Sanitary Aspects, and the Sewerage of Cities, by S. D. Seelye, M.D., President of the Medical and Surgical Society, of Montgomery, member of the Committee on Public Health of the State Board of Health of Alabama, etc., is an instructive pamphlet for popular use, showing the salutary results which have followed drainage and sewerage; the common dangers of foul soils; the difficulties of the effectual removal of slop waters and excrementitious matters in populous communities, in any other way than by efficient sewerage, and a concise illustrated presentation of the much overrated Rochedale system. It is an excellent contribution to the subject of which it treats, and worthy of extensive circulation. Barrett & Brown, Montgomery, Ala.

Transactions of Medical Association of Georgia, 1880, pp. 251, after the minutes, open with the address of the President, Dr. Joseph A. Eve, who urges the importance of sanitation in the State, and much needed legislation for its maintenance. Dr. J. C. Le Hardy has a paper on *National Sanitation*, in which he discusses the National Board of Health, and what he considers its proper functions—that it "should endeavor to discover and impart to the people a knowledge of the best way to live," etc., and points to the example of the Signal Service, and the estimation in which it is held by the people, as worth following by the National Board of Health, to which, if the National Board has any analogy whatever, it is that which Dr. Le Hardy censures and condemns; for if the chief of the Signal Service had never done anything but investigate meteorology and recommend its practice to State authorities instead of actual work, it would probably never have accomplished any good whatever. Dr. Le Hardy's opposition to the National Board is, in short, because it is a working body, instead of a mere figure-head, as he would have it be. The *Annual Oration*, by Dr. W. S. Kendrick, is a stirring address on the true dignity of the profession and maintaining it at the sacrifice of all mere personal ambition and aggrandizement.

The papers on the various branches of practice are: *Scrofulous Diseases of the Joints*, by Robert Batty, M.D.; *Uncomplicated Stricture*, by Wm. S. Armstrong, M.D.; *Ophthalmic Operations*, by A. Sibley Campbell, M.D.; *Polypus in the Rectum*, by Thos. H. Kenan, M.D.; *Congenital Phimosis*, by E. H. Richardson, M.D.; *Incised Wound of the Elbow*, by Thos. R. Wright, M.D.; *Double Ovariotomy*—Case of, by P. L. Hilsman, M.D.; *Amblyopic Affections*, by Chas. W. Hickman, M.D.; *Some Disorders of the Genito-Urinary Organs*, by John T. Johnson, M.D.; *Cataract Operations*, by T. M. McIntosh; *Report on Gynecology*, by T. F. Walker, M.D., and *Muriated Iron as a Styptic;* and an interesting physiological paper on *Organic Affinity*, by Lewis D. Ford, M.D., considering the depurative action of the organic functions and of the kidneys in particular, in depriving the blood of poisonous qualities.

"**Camping in Colorado**"* is a very pleasantly-written book, descriptive of a journey by rail over the great American plains into the popular resorts of the Rocky Mountains, useful to all persons who contemplate visiting those regions for health or pleasure, and entertaining to all who enjoy books of travel and the charms of descriptive scenery.

* With Suggestions to Gold-Seekers, Tourists and Invalids, by S. Anna Gordon, author of "Music of Waters," "Missing Gems," "Pebbles," etc. New York: Authors' Publishing Company.

The Fifteenth Annual Report of the National Temperance Society, held in New York, in May last, recounts excellent progress in all its departments. In no previous year have so many contributions to the literature of temperance been published and distributed. Public opinion has been aroused as never before, against the habit of social drinking and the vice of drunkenness. Many legislatures have also had their attention drawn to intemperance in its costly aspects to the State, and taken measures with reference to its restraint with a view of lessening pauperism and crime.

Physicians are becoming more and more convinced, not only of the inutility, but of the actual injury to the physical system, of the use of alcohol, even in small quantities, and it is sincerely to be hoped that the time is not far distant when all civilized governments will appreciate the folly and the wickedness of promoting pauperism, insanity, vice and crime, by fostering the manufacture and sale of intoxicating liquors.

Transactions of the Medical Society of Tennessee, forty-seventh annual meeting, Nashville, April, 1880. The usual minutes are followed by the address of the President, Dr. E. M. Wright, on medicine in general, and the work of the Havana Commission of the National Board of Health in particular, which he thinks marks an important epoch in the history of sanitary science. The only other papers with any bearing at all upon State medicine or sanitary matters are *Insanity Dependent Upon Physical Disease*, by W. P. Jones, M.D.; and *Bowel Disorders of Infantile Life*, by Deering I. Roberts, M.D., and these but little. The papers on practical medicine and surgery are: The Use of Obstetric Forceps, by Thomas Menes, M.D.; Open Treatment for Amputations, G. B. Thornton, M.D.; Femoral Hernia, W. T. Hope, M.D.; Hypodermic Medication, T. J. Tyner, M.D.; Hypermetropia, Van S. Lindsley, M.D.; Iodine a Substitute for Quinia, Fordyce Grinnell, M.D.; Surgical Dressings, T. O. Summers, Jr., A.M., M.D.; General Cirrhosis, W. J. Miller, M.D., and Traumatic Cataract, J. G. Sinclair, M.D.

Astronomy in Rochester.—The new Warner Observatory, which is being erected at Rochester, N. Y., is attracting much attention in social and literary as well as scientific circles. The new telescope will be twenty-two feet in length, and its lens sixteen inches in diameter, thus making it third in size of any instrument heretofore manufactured, while the dome of the observatory is to have some new appliances for specially observing certain portions of the heavens. It is to be the finest private observatory in the world, and has been heavily endowed by Mr. H. H. Warner. Professor Swift has labored under numerous disadvantages in the past, and the new comet which he recently found was in spite of many obstacles, but as the new institution is to be specially devoted to discoveries, there are good reasons to expect very many scientific revelations in the near future, from the Warner Observatory at Rochester.

Quack Doctors and Newspapers.—The following editorial and advertisement were clipped from the same newspaper:

QUACK DOCTORS.—The ancient highwayman was a considerate person. His demands might sometimes seem urgent, but they kept within certain bounds. He gave you a choice of evils. If you would surrender your money you might keep your life, and doubtless he often praised himself for easing you of that which might have proved to you a snare, while he granted you the most precious of earthly blessings.

The modern quack doctor is a much more bloodthirsty character. He has no such scruples as the highwayman, and no such moderation in his demands. With him there is no alternative. He wants your money *and* your life. When he has got your money he goes on to deprive you of your life. He makes you pay him heavily for putting you to death.

Precisely how large is the addition made by these bloodsuckers to our bills of mortality will never be known until the judgment day. And it would be difficult, no doubt, to estimate the amount of money that they annually extort from their victims. Those who have some means of knowing the condition and the habits of the humbler classes are aware that the amount is very large. It is a pity that the facts cannot be brought to light. Will not General Walker try to include this item in the tables of the next census? If it were only known how much these people are doing to impoverish and destroy human beings, a society with a longer name than that of Bergh's would soon arise for their suppression.

TO MY PATRONS: I still offer my valuable services, if you are so unfortunate as to require them. With a mind matured and enriched by studies of an advanced order, I can safely say that there is hardly a disease in the catalogue of human ills that I cannot treat to a successful issue.

Ladies, I am always ready to assist you. My past knowledge has been increased by extensive experience. I am now able to treat you with the certainty of success. No case peculiar to your delicate organism is beyond my control. My Female Monthly Medicines are superior to any offered heretofore, and will be warranted to have the desired effect in all cases. Those of the public who need my services can depend upon gentlemanly, honorable and scientific treatment at reasonable rates. All troubles or complaints of a private nature will receive that prompt attention they so imperatively demand.

Persons afflicted can, if they prefer, consult me by letter, detailing the symptoms of the disease or trouble, and receive medicines by express, with full instructions. All letters must be directed: "———, ——, ——." Cure warranted in all cases or no pay required. Consultations, personally or by letter, gratis. Send for book. Comfortable apartments for patients at my infirmary (when desired) with experienced nurses.

Consultation Parlors, —— ——, adjoining the Young Men's Christian Association building. Office hours from 9 A. M. to 8 P. M.

My diploma hangs in my office.

— — ——, M. D.

For sale as above, an Essay on Physiology of Marriage, by — — ——, M. D.

Publications Received.—Kentucky State Board of Health Report; Roberts' Compend of Anatomy; Report on Plan of Sewerage for Newport; The Church and Temperance; Pomeroy on Emmetropic and Ametropic Eyes; Van Derveer on Gastric Ulcer; Report of Pennsylvania Hospital for the Insane; Western Farmer of America—Mongredieu; Missouri Medical Society Transactions.

Pharmacopee Universelle, par M. le Prof. GILLE, de Bruxelles, et M. H. P. MADSEN, Vice-Président de la Société Pharmaceutique de Copenhague. Uniformite Internationale en Medecine par M. le Dr. SEGUIN, de New York. Communications et Rapports présentés au Congrès périodique international des sciences médicales. Genève, Imprimerie Ramboz et Schuchardt.

Discours prononce *par* M. LE BARON LARREY.—*Chambre des Députés* Extrait du *Journal Officiel* du 15 juin 1880. Séance du 14 juin 1880.—*Projet de Loi sur l'Administration de l'Armée.* Paris. Librarie des Publications Legislatives. A. Wittersheim et C^ie^ Quai Voltaire, 31, 1880.

De la Neutralisation *des virus en dehors de l'économie,* par M. LE DR. E. VALLIN. Extrait de *La Revue d'Hygiène,* (Juliet, Aout, Septembre, 1879) Paris, G. Masson, Éditeur. Librarie de l'Académie de Médecine, 120 Boulevard Saint-Germain et rue de l'Éperon, en face de l'École de Médecine, 1880.

Des Appareils a Desinfection *Applicables Aux Hapitaux et aux Lazarets:* par M. LE DR. E. VALLIN. Extrait de la *Revue d'Hygiène,* (Octobre, 1879). Paris, G. Masson, Éditeur, Libraire de l'Académie de Médecine, 120 Boulevard Saint-Germain et rue de l'Éperon, en face de l'École de Médecine, 1880.

Ville de Bruxelles. Annuaire de la Mortalité, au Tableaux Statistiques des Causes de Décès et du Mouvement de la Population, par le docteur E. JANSSENS, Inspecteur du service de Santé de la ville, Membre du Conseil supérieur d'Hygiène publique, etc., etc. Avec plans et diagrammes en chromolithographie, 17^e^ année. Bruxelles, Imprimerie de V^e^ J. Baertsoen Grand' Place, 5, 1879.

Ville de Bruxelles: *Hygiène Scolaire.* Instructions Sommaires sur les premiers symptomes des maladies transmissibles. Formules à l'usage du personnel des écoles communales, par le service d'Hygiène de la Ville, Bruxelles, Imprimerie de V^e^ J. Baertsoen, succes. de Bols —Wittouck. Grand' Place, 5, 1880.

Stad Brussel. *Gezondheidsleer der eerste Jaren.* Raadgevingen aan de Huismoeders. Brussel, Drukkerij Van W^e^ J. Baertsoen, Groote Markt, 5, 1880.

INDEX TO VOL. I.

PAGE

Agnew, C. R., M.D., Importance of Sanitary Science 3
Agnew, C. R., M.D., Defective Drainage... 562
A. P. H. Association, 42, 88, 132, 285, 331, 407
A. P. H. Association and Homœopathy.. 525
American Medical Association 132
Air and Light, W. M. Carleton 167
Animals have an Instinct to select their own Medicine 108
Action of Tea on the Human System and the Effects of Tea Tasting, E. Clapton, M.D., F.R.C.P. 212
Adirondack Wilderness 241
Animal Refuse of Large Cities, Col. J. L. Storer 204
Allen, N., M.D., LL.D., Law of Longevity. 481
Artificial Feeding, Jerome Walker, M.D.. 254, 402
Anderson, W. C., M.D., Defective Drainage. 553

Brandeis, L., Defective House Drainage... 447
Benton, J. B., M.D., Defective Drainage.. 554
Bermudas, The 393
Boulden, J. E. P., Cholera—its Cause and Prevention 362
Babcock, J. F., Warming 300
Bread, Tests and Adulterations, A. N. Bell. 145
Bill for the Establishment of a National Sanitary Bureau 11
Bell, A. N., M.D., Bread, Tests and Adulterations 145
Bell, A. N., M.D., New York Quarantine Establishment 22
Bell, A. N., M.D., Defective Drainage..... 530

Conclusion of Vol. I. 572
Cayuga County, Defective Drainage..... 557
Consumption of Oxygen... 446
Cripples made by Intemperance 361
Cerebro-Spinal Meningitis 320
Cholera Stamped out, Prof. Hamilton.... 199
Clapton, E., M.D., F.R.C.P., Action of Tea on the Human System 212
Cholera, A. N. Bell, M.D. 221
" Its Cause and Prevention, J. E. P. Boulden, M.D. 362
" Prof. Henry Hartshorn 283
" J. C. Peters 277, 466
Carleton, W. M., Air and Light 167
Chignon, The 124
Correspondence 186
Christian at Work 285
Cincinnati Hospital 361, 433
Caswell, Hazard & Co 526
County of New York, Defective Drainage. 535
Consumption of Oxygen 446

Danger of Wet Coal 285
Dangerous Ballasts 185
Death in a Damp Cellar 220
Dickinson, W. H., M.D., F.R.C.P., Morbid Effects of Alcohol 224
Disinfectants 267
Disinfection, B. A. Segur, M.D. 289
" E. R. Squibb, M.D. 295
" A. N. Bell, M.D. 297
Defective Drainage, Moreau Morris, M.D.. 49, 97, 303, 535

PAGE

Defective Drainage, A. N. Bell, M.D..... 529
" " E. M. Moore, M.D.... 565
Defective House Drainage, Leopold Brandeis 447
Drainage, Law for. 571
Drainage for Health, A. N. Bell, M.D 514

Eaton, D. B., Sanitary Administration in Cities 496
Effect of Change of Temperature on Health 37
Epidemiological Association of Md...184, 285
Epidemic Cerebro-Spinal Meningitis, Moreau Morris, M. D. 191
Examiners in Lunacy 570

Farrington, J. M., M.D., Defective Drainage 556
Fog Epidemic 499
Fruits in Cholera Times 358
Fashion 259, 429
Free Sanitariums 184
Free Parks and Camping Grounds for Children, J. M. Toner, M.D. 71
Friends and Collaborators 89, 184
Felonious Homicide, Alonzo Calkins, M.D. 527
Giles, Capt. P. J. J., The Sanitarian..... 285
Gray, J. P., M.D., Defective Drainage..... 563
Guernsey, Dr., Defective Drainage..... 562

How to Ventilate School-Houses, R. C. Kedzie, M.D. 517
Hospitals of New York, F. E. Hyde...337, 440
Healthy Women, Demand for 469
Humility 367
Health Undervalued 312
Hamilton, F. H., Cholera Stamped out... 199
How to Cure Dyspepsia 211
Health 227
Health Legislation for New York 570
Hammond, Wm. A., M.D., Sanitary Influence of Light 58
How to Cure a Cold 155
How to Purify Drinking Water 235
Health Board Appointments in New York. 236
Hartshorn, Henry, M.D., Prediction in Regard to Cholera 283
Hudson River Hospital for the Insane.... 381

Inheritance of Deformities 495
Impure Water 516
Insanity and Idiocy 361
Importance of Sanitary Science, C. R. Agnew, M.D. 3
Infant Mortality, with Suggestions for Improving the Conditions of Foundlings, Committe of New York State Medical Society 18
Imposition on Life Insurance 186
Increase of Mortality in England 524
Inductive Inquiries in Phrenology, Ethics and Ethnology, A. N. Dana 240
Janes, C. H., M.D., School Poisoning..... 35
Kedzie, R. C., M.D., Ventilation of School-Houses 517
Kings County Defective Drainage 531

Law of Longevity, Nathan Allen, M.D. 481
Leavitt, S., Sewage Question 459, 507

PAGE

Lynch, J. S., M.D., Prevention of Diseases 449
Leeds, L. W., School-House Ventilation... 385
" Sleeping Rooms..... 354
" New York School-Houses.... 371
" Sanitary Architecture..... 105
Life Insurance—Trades Unions..... 328
Life's Equivalent..... 156
Life Problems..... 458
Lightning Rods..... 63
Life Insurance, Promotive of Longevity and Business Success..... 41

LITERATURE:

A Physician's Problems, By Charles Lilam..... 571
Atmosphere, The, Translated from the French of Camille Flammarion..... 479
Advice to a Mother on the Management of her Children, Chavasse, P. H..... 142
Alcohol—its place and power, James Miller..... 190
Adventures in the Wilderness, William H. Murray..... 334
A Self-Made Woman, Emma May Buckingham..... 526
Bazar Book of Decorum..... 382
Bazar Book of Health..... 382
Bacchus Dethroned, Fred'ck Powell. 190
Cholera, Prof. H. Hartshorn, M.D.. 238
" J. C. Peters, M.D..... 334
" Circulars..... 235
Contributions to Medical Science, from the Bureau of Medicine and Surgery..... 47
Clinical Lectures on Various Important Diseases, N. S. Davis, M.D.. 144
Diseases of Domestic Animals, Noah Crepy, M.D..... 527
Doctor in Medicine, Stephen Smith. 47
Digestion and Dyspepsia, R. T. Trall. 334
Dictionary of Medical Sciences, Dunglison..... 571
Eating and Drinking, Geo. M. Beard. 139
Effects of the Use of the Sewing Machine, Drs. Parker, Lassiter and Hamilton..... 480
Family Thermometry, Edward Seguin, M.D..... 140
Foods, Edwards Smith, M.D., LL.B.. 331
Fourteen Weeks in Natural Philosophy, J. Dorman Steele, Ph.D.... 382
Forest and Stream..... 432
Fourteen Weeks in Human Physiology, J. Dorman Steele, Ph.D.. 239
Fourteen Weeks in Chemistry, J. Dorman Steele, Ph.D..... 240
Fourteen Weeks in Geology, J. Dorman Steele, Ph. D..... 43
Fourteen Weeks in Astronomy, J. Dorman Steele, Ph.D..... 48
First Lessons on Health, J. Berners 47
Home Nook, Amanda M. Douglass.. 572
Handbook of Hygiene, Geo. Wilson. 480
Health and its Conditions, James Hinton 140
Hospital Hygiene and Observations on Nursing, Chas. Langstaff, M.D., M.R.C.S.E..... 430
Hufeland's Art of Prolonging Life, Erasmus Wilson, M.D..... 189
Infant Feeding and its Relations to Infant Mortality, From New York Medical Review..... 336
Illustrations of the Influence of the Mind upon the Body in Health and Disease, Daniel Hack Tuke, M.D., M.R.C.P..... 237
Insanity and its Relations to Crime, Wm. A. Hammond, M.D..... 238

PAGE

Infant Diet, A. Jacobi, M.D..... 335
International Review, A. S. Barnes. 528
Johnston's Dental Miscellany..... 528
Lessons in Political Economy, J. T. Champlin..... 430
London Medical Record..... 383
Le Progrès Médical..... 383
Life of Edwin Forrest, James Rees. 572
Married, A Novel, Mrs. C. J. Newby 572
Mrs. Hale's New Cook Book..... 382
Mechanical Treatment of Diseases of the Hip-Joint, Chas. F. Taylor, M.D..... 383
Mrs. Armington's Ward, D. Thew Wright..... 528
Medical Society of New Jersey..... 527
Medical Association of Arkansas... 527
Medical Register of New York and Vicinity, A. E. M. Purdy..... 239
Medical Practice Modified, C. H. Giberson..... 432
Manual of Popular Physiology, being an attempt to explain the Science of Life in untechnical language, Henry Lawson, M.D.... 144
Manual of Moral Philosophy, designed for High Schools and Colleges, A. Peabody, D.D., LL.D.. 430
Memorial of the American Medical Association, with regard to the Rank of the Medical Corps of the U. S. Army, J. M. Toner, M.D. 336
Mineral Springs of the United States and Canada, G. E. Walton, M.D. 188
National Teacher, E. E. White, editor and publisher..... 432
New System of Ventilation, Henry H. Gouge..... 240
Nothing to Drink, Julia M. Wright. 189
Ozone and Antozone, C. B. Fox, M.D. 333
Politics and Mysteries of Life Insurance, Elizur Wright 431
Public Health, Abbotts Smith..... 383
Physicians' Visiting List for 1874... 383
Physiology and Laws of Health, Edward Jarvis, M.D..... 48
Passions in their Relations to Health and Diseases, Translated from French, by H. F. Damon 189
Parkersburg Mineral Wells, and Specific Contagion of one form of Puerperal Fever, Dr. E. D. Safford..... 336
Prevention and Cure of Diseases, Geo. H. Napheys, A.M., M.D.... 332
Popular Journal of Physical and Mental Hygiene..... 192
Psoryasis, F. Le Roy Satterlee, M.D.. 336
Report on Epidemics of Piedmont District, A. S. Payne, M.D..... 480
Report of Cases Treated by Electricity, J. J. Caldwell, M.D..... 432
Surcharged and Different forms of Retaining Walls, J. S. Tate..... 571
Sub-Tropical Rambles in the Land of the Aphanapteryx, Nicholas Pike..... 479
Superstition and Force, H. C. Lea 334
Salary Grab, W. S. Robinson..... 384
System of Surgery, Wm. T. Helmuth, M.D..... 526
Santo Domingo, Past and Present, with a Glance at Hayti, Samuel Hazard..... 143
Stimulants and Narcotics, Geo. M. Beard, M.D..... 139
Sewer Gas, and how to keep it out of houses, Osborne Reynolds. 47
Second Annual Report of the Diseases of Domestic Animals in Connecticut, Noah Crepy, M.D . 19

PAGE

Ten Minute Talks on All Sorts of Topics, Elihu Burritt..... 572
Thirteenth Annual Report of the Managers of the State Lunatic Asylum, Utica, N. Y., 1872..... 363
Transactions of the Medical Society of the State of West Virginia... 335
Transactions of the Medical and Chirurgical Faculty of the State of Maryland..... 335
Transactions of the Medical Society of the State of Pennsylvania.... 431
The Bath, R. T. Trall, M.D..... 237
Transactions of the Third Annual Session of Medical Society of Va. 480
Thinkers and Thinking, J. E. Garretson, M.D..... 382
The Toner Lectures..... 527
Transactions of the Michigan State Medical Society, 1873..... 527
Ten Laws of Health; or, How Disease is Produced and can be Prevented, J. R. Black, M.D.... 141
U. S. Marine Hospital Service, 1872, John M. Wordsworth, M.D..... 48
Vick's *Floral Guide*..... 528
Ventilation of Buildings, W. F. Butler..... 432
Wohler's Outlines of Organic Chemistry, Rudolph Fittig, Ph.D..... 333
Wilkie Collins' Works..... 431
Webster's Dictionary, Unabridged.. 478
LL.D.: Nathan Allen..... 331
London Smoke..... 120

Memphis, Sufferings of..... 489
Moore, Prof. E. M., Defective Drainage.... 585
Morris, J., M.D., Scarlatina:..... 500
Morris, Moreau, M.D., Defective Drainage. 49, 97, 208, 303, 585
Morbid Effects of Alcohol, as shown in persons who trade in liquor, W. H. Dickinson, M.D., F.R.C.P..... 224
Medicine to the Dogs..... 112
Medical Care and Nursing of Children, Jerome Walker, M.D..... 64
Maryland Epidemiological Association.... 235
Massena Springs..... 283
Med. Record s Criticism on Hygiene Committee..... 478
Modern Medicine; its Status in Modern Society, Homer O. Hitchcock, M.D. 191

National Sanitary Bureau..... 520
Nature's Scavengers..... 401
New York City School-Houses, L. W. Leeds..... 371
New York and Brooklyn Ferries..... 174
Nursing of Children, Jerome Walker, M.D. 113
New York Quarantine Establishment, A. N. Bell, M.D..... 22
Necessity of Revaccination. A. N. Bell.... 38
Needful Directions..... 235

Oneida County, Defective Drainage..... 551
Outbreak of Asiatic Cholera, J. C. Peters. 466
O'Sullivan, R. J., M.D., Sanitary Superintendence of public Schools..... 368
Ocean Travel, and its Dangers..... 157
Our Weighs..... 161

Physicians' Diary of Business..... 85
Prospectus..... 1
Public Health, The....82, 126, 177, 192, 228, 286, 328, 378, 476, 520
Prevention of Diseases, J. S. Lynch, M.D. 449
Phelps, E. B., M.D., Defective Drainage... 554
Profession of Nursing..... 359
Peters, J. C., M.D., Southwestern Cholera. 277, 466
Preventive Medicine, Dr. Seegen..... 17
Poisoned Air..... 197

PAGE

Professional Hours and Appointments.... 236
Profession of Nursing, *Hearth and Home*.. 381
Practical Points in the Medical Care and Nursing of Children, Jerome Walker. 381

Quarantine Establishment of N. Y., A. N. Bell, M.D..... 22

Revaccination, A. N. Bell, M.D..... 38
Richmond County, Defective Drainage.... 553
Resistance to Cholera, John Simon..... 263
Raising of Children Doubled..... 307
Risks of Life Insurance..... 121
Results of Sanitary Improvements of Towns, Stephen Smith, M.D..... 14
Ruffled Temper as a Cause of Ill Health.. 478

Sanitary Administration in Cities, D. B. Eaton..... 496
Scarlatina, John Morris, M.D..... 500
Sewage Question, S. Leavitt.....459, 507
State Medicine and Public Hygiene, A. B. Stewart, M.D..... 470
School-House Ventilation, L. W. Leeds... 385
Sleeping-Rooms, L. W. Leeds..... 354
Sanitary Superintendence of the Public Schools of New York, R. J. O'Sullivan. 368
Simon, John, Resistance to Cholera..... 263
Sea Bathing, Abbotts Smith, M.D..... 268
Smith, A., M.D., F.R.C.P., Sea Bathing... 268
Southwestern Cholera of 1873, J. C. Peters, M.D.....277, 313
Segur, B. A., M.D., Disinfection..... 289
School Poisoning in New York.....35, 193, 308
Sackett, S. P., M.D., Defective Drainage.. 557
Snyder, —, M.D., Defective Drainage..... 564
Sherman, —, M.D., " " 567
Storer, J. L., Animal Refuse in large cities. 204
State Medicine and Public Hygiene....169, 570
Sanitary Architecture, L. W. Leeds..... 105
Sanitary Influence of Light, Wm. A. Hammond, M.D..... 58
Sanitary Condition of Emigrant Ships.... 87
Smith, Stephen, M.D., Results of Sanitary Improvements of Towns..... 14
Seegen, Dr., Preventive Medicine..... 17
School Poisoning, and Tenant and Factory Suffocation, E. H. Janes, M.D.... 35
Street Sprinkling..... 296
Sanitary Work..... 284
Sanitary Topography..... 525
Stiles, C. L., M.D., Defective Drainage.... 554

To Contributors..... 570
Toner, J. M., M.D., Free Parks and Camping Grounds for Children..... 71
Tasteless Medicines.....186, 331
Transactions Med. Soc. State of N. Y..... 529
Tioga County, Defective Drainage..... 554
Tompkins County, Defective Drainage.... 556
Typhoid Fever and Impure Milk..... 299

Unhealthy Business..... 186
Unconsidered Murderers..... 109
Useful Soap..... 319
Vaccination..... 571
Ventilation..... 302
Value of Inherited Longevity..... 409

Viele, Gen. E. L., Defective Drainage..... 560

Walker, J., M.D., Artificial Feeding....254, 401
"Woodman, Spare that Tree," Geo. Morris 253
Warming, J. F. Babcock, M.D..... 300
Why He Smoked..... 207
Wet Nursing and Artificial Feeding, Jerome Walker, M.D.....64, 113, 162, 236
Watering Places of England..... 86
World, The..... 525
Wolcott, S. G., M.D., Defective Drainage... 551

INDEX TO VOL. II.

	PAGE
Artificial Feeding of Children, Jerome Walker, M.D.	16
Army Medical Rank	86
Age of Man	112
A Lady's Nose Saves a Man's Life	133
Air for Babies, Jerome Walker, M.D.	154
A Dangerous Paper	166
American Medical Association	167
Altitude at which Men can Live	252
A Crazy Young Man	254
Advice to Mothers	274
Adulterated Houses	314
A New Departure in Hydrophobia	317
Alcoholic Strength of Various Bitters	322
Allen, Nathen, M.D., LL.D., Mental Culture	198
Allen, Nathan, M.D, LL.D., Position of Woman	271
Agnew, C. R., M.D., School Diseases	241
Angell, G. T., Unwholesome Meat	265
American Public Health Association..142, 329,	427
" Surgery and Hospitals	523
Artists' Holiday	223
Abattoirs....472 (in Philadelphia)	523
" and Drove-Yards, J. H. Rauch, M.D.	557
Analytical and Food Dept....429, 473, 522,	569
"Boys, Read This."	19
Bermuda in Winter	113
Boiled Hammers	197
British Emigrants	339
Burns and Scalds, John Morris, M.D.	409
Building Ground, E. M. Hunt, M.D.	431
Brandeis, Leopold, The American Aladdin.	35
" " Traps and Trapping	73
" " Common Dangers of House Drainage	412
Bayles, Geo., M.D., Disposal of the Dead	97
Black, J. R., M.D., "Taking Cold."	116
" " " Health of the People	403
Bartlett, H. L., M.D., Thermometrical Notes in Disease	255
Bartlett, H. L., M.D.; A New Departure in Hydrophobia	317
Bartlett, H. L., M.D., New Theories of Disease	331
Bartlett, H. L., M.D., Physical Culture 460, 492,	546
Barnard, C. T., Utilizing Sewage	295
" " The Sewage Question	344
Bell, Clark, N. Y. Med.-Legal Society	385
Bell, A. N., M.D., Perils of the School-room	433
Bell, A. N., M.D., Waste of Life	145
Bell, A. N., M.D., Brain Culture	539
Brooklyn, and Brooklyn Schools	134
Brooklyn's Increase of Preventable Diseases	373
Big Invention	524
Concerning College Life, Dr. Ollapod	10
Care and Safe Keeping of Lunatics	173
Concentration of Slaughtering in Cities, Stephen Smith, M.D.	193
Cruelty	213
Caution to Water Drinkers	270
Criminal Responsibility, Thos. J. Mays, M.D.	296
Carbolic Acid, Elwyn Waller, A.M., E.M.	337
Contaminated Water, Gen. E. L. Viele, C.E.	370
Carbonic Acid, W. H. Thayer, M.D.	401
Common Dangers of House Drainage, L. Brandeis	412
Car Ventilation	491
Cameron, Charles A., Ph.D., M.D., Hygiene of Dwellings	75
Centennial of Chemistry	224
Columbia Springs	283
Colorado for Consumption, F. L. M.	378
Crushed White Wheat	522
Cure for Discontent	538
Drainage for Health, Jos. Wilson, M.D., U. S. Navy	1
Disposal of the Dead, Geo. Bayles, M.D.	97
Defective Drainage, S. G. Parker, M.D..124,	172
" " in New York	551
"Do You Live Over the Shop?"	200
Decomposition	316
Diphtheria, Causes and Nature of, J. Lewis Smith, M.D.	509
Diphtheria, Facts in the History of, Elisha Harris, M.D.	511
Dana, A. H., Physiology of Intemperance.	244
" Enigmas of Life	496
Effects of Alcohol	174
Enigmas of Life, A. H. Dana, Esq.	496
Epistolary, "To My Wife," R. H. L.	330
Effects of Worry	304
Endemann, H., Warming and Ventilation.	20
Furnaces, R. C. Kedzie, M.D.	312
Florida for Invalids	495
Fisher, G. J., M.D., Development of Fever by Obstructed Drains	132
Fox, John M., M.D., Typhoid Fever...156,	210
Foster, Frank P., M.D., Vaccination	357
German Measles in New York, J. Lewis Smith, M.D.	162
Gross, S. D., M.D., Sanitary Deficiencies	419
Gregory House, Mahopac, Gen. E. L. Viele	370
Hudson River State Hospital	11
Hygiene of Dwellings, Chas. A. Cameron, Ph.D., M.D.	75
Health and Culture, Rev. Dr. Osgood	400
Health of the People, J. R. Black, M.D.	403
Hindrances to Vaccination, J. M. Toner, M.D	443
Hand-Feeding of Infants, Eustace Smith, M.D. 444,	505
Hunt, E. M., M.D., Building Ground..411,	431
Harris, Elisha, M.D., Diphtheria	511
Hydrophobia	217
Home, *Appleton's Journal*	65
I'm only a fly	155
Influence of Altitude on Health	47

PAGE

Janes, E. H., M.D., Management of Slaughter-houses 289
Judson, A. B., M.D., Sanitary Inspectors.. 351

Kedzie, R. C., M.D., Furnaces 312

Laughter as a Medicine 74
Lotion for Fetid Feet 302
Leavitt, Samuel, The Sewage Question..59, 87
Leeds, Lewis W., Principles of Ventilation 79
Liautard, A., M.D., Pink Eye Amongst Horses 164
LITERATURE:
Autobiography of Edward Wortley Montague, Mackenzie 238
American Journal of Dental Science. 240
American Journal of Pharmacy 240
Archives of Electrology and Neurology 239
Archives of Dermatology 527
Alcohol, J. G. Dudley 334
A Manual of Public Health, Michael, Corfield and Wanklyn 191
A Conspectus of Medical Science, Henry Hartshorn, M.D. 231
Annual Report of Surgeon-Gen'l U. S. Army 478
Body and Mind, Maudsley, M.D. 236
Beaten Paths, Ella W. Thompson .. 288
Catalogue of the Library of Surgeon-Gen'l's Office, U. S. Army, J. S. Billings, M.D. 96
Climate and Diseases of the Gulf Coast of the Florida Peninsula, J. P. Wall 335
Clinical Lectures on the Diseases of the Nervous System, W. A. Hammond, M.D. 383
Clara Lake's Dream, Mrs. H. Wood.. 384
Croup, J. S. Cohen, M.D. 429
Clinical Lectures, Nathan S. Davis, M.D. 430
Caleb Krinkle, Charles C. Coffin 527
Contributions to the Annals of Medical Progress, J. M. Toner, M.D. 526
Detroit Review of Medicine and Pharmacy 236
Dental Cosmos 240
Electro-Therapeutics, D. F. Lincoln, M.D. 287
Eulogy of Charles Sumner, Carl Schurz 288
Essays on Conservative Medicine and Kindred Topics, Austin Flint, M.D. 333
Epidemic Yellow Fever, R. F. Michel, M.D. 334
Essentials of Medicine, Henry Hartshorn, M.D. 383
Experimentation on Animals, J. C. Dalton, M.D. 525
Electricity for Nervous Diseases, Dr. F. Fieber 526
Exhibition Drama, George Baker ... 475
Food, H. Letheby 228
Fifty-seventh Annual Report of the state of the Asylum for the Relief of Persons Deprived of the use of their Reason, J. H. Worthington, M.D. 237
Five Thousand a Year, Mrs. H. Wood 334
Field, Lawn and Garden 528
Fothergill, J. M., M.D., Maintenance of Health 570
Galvano-Therapeutics, David Prince, M.D. 283
Hints for Health, J. S. Stocker, M.D. 285
Hooker's New Physiology, Worthington Hooker, M.D. 332
Health and Education, Rev. Charles Kingsley 333
Higginson, T. W., Young Folks' History of the U. S. 570
Inflammation of the Lungs, Dr. Ludwig Buhl 231
Infant Diet, A. Jacobi, M.D 332
Introduction to the Study of Biology, Thomas C. MacGinley.. 332
Ivanhoe, Sir Walter Scott 475
Kate Kennedy, Mrs. C. J. Newby ... 285
Katherine Earle, Aneline Trafton ... 334
Lord of Himself, F. H. Underwood. 284
Lectures on Public Health, E. D. Mapother, M.D. 283
Love at First Sight, Henry Curling. 336
Longevity—Biometry, T. S. Lambert, M.D. 524
Lessons of Hygiene and Surgery from the Franco-Prussian War.. 227
Maintenance of Health, J. M. Fothergill, M.D. 570
Milk Analysis, J. A. Wanklyn 292
Medical Use of Alcohol, Jas. Edmunds, M.D. 474
Microscopical Examination of Certain Waters, Dugald Campbell .. 474
Municipal Law and its Relations to the Constitution of Man, R. S. Guernsey 527
Medico-Legal Papers 477
Medical Society of N. Jersey 527
Nomenclature of Diseases, John M. Woodworth, M.D. 335
Observations on the Pathology and Treatment of Cholera, John Murray, M.D. 284
Principles of Mental Hygiene, D. A. Gorton, M.D. 284
Peter's Musical Monthly 240
Principles of Mental Physiology, W. B. Carpenter, M.D. 285
Physiology for Practical Use, James Hinton 287
Prophetic Voices Concerning America, Charles Sumner 288
Physiology of Man, Austin Flint, M.D. 331
Popular Resorts and How to Reach Them, John B. Bachelder 334
Public Health 475
Report of the Committee on the Yellow Fever Epidemic of 1873, at Shreveport, La., Henry Smith, M.D. 143
Running to Waste, George Baker ... 334
Sanitary Subjects, Richard J. Halton. 229
Sanitary Arrangement for Dwellings, Wm. Eassie 280
Syphilis of the Eye, Henry Noyes, M.D. 335
The Distribution and Natural History of Yellow Fever, J. M. Toner, M.D. 95
The Soldier's Manual of Sanitation, Charles A. Gordon, M.D. 227
The Sewage Question, From Dr. Letheby's "Notes and Chemical Analysis." 229
Treatise on Food and Dietetics, Henry C. Lea 282
The Science of Homœopathy, Chas. J. Hempel, M.D. 283
Thurid and other Poems, G. E. Q... 284
The Education of American Girls, Anna C. Brackett 285
Transactions of the Fourth Annual Session of the Medical Society of Virginia 286
Transactions of the Medical Society of the District of Columbia..287, 480

	PAGE
Transactions of the Medical and Chirurgical Faculty of Maryland..	479
Transactions of the New Hampshire Medical Society	479
Transactions of the Medical Society of the State of Pennsylvania...	480
Transactions of the American Medical Association	480
Transactions of the Michigan State Medical Society	476
Transactions of the Medical Association of Alabama	480
Thirty-first Annual Report of the Managers of the State Lunatic Asylum	237
The Virginia Medical Monthly	238
The Chicago Journal of Nervous and Mental Diseases	239
The Unitarian Review	239
The Country Gentlemen	240
The American Turfman	240
The American Gas Light Journal	240
The American Builder	240
The National	240
The Presence of Organic Matter in Potable Water Always Deleterious to Health, O'Brien Mahoney.	284
The Condition of the Conflict, Alexander Hutchins, M.D.	288
Transfusion, A. C. Hamlin, M.D.	288
The Sanitary Journal	333
The N. Y. Trade Reporter	335
The Laboratory	336
The Mother's Hygienic Hand-book, R. T. Trall	383
The Building of a Brain, Edward Clarke, M.D.	333
Take a Peep, Paul Corden	384
The Nobleman's Wife, Mrs. Henry Wood	384
The Physician's Visiting List	429
The Sanitary Record	474
The Breath, J. W. Howe, M.D.	474
The Drift of Medical Philosophy, D. A. Gorton, M.D.	474
The Illustrated Annual Register of Rural Affairs	474
The Smuggler's Ghost, Mrs. Henry Wood	476
The Runaway Match, Mrs. Henry Wood	476
Toner Lectures, J. M. Da Costa, M.D.	480
The New York School Journal	523
The Nursery	523
U. S. Marine Hospital Service, John Woodworth, M.D.	95
Under the Trees, S. I. Prime	284
Vaccination, E. L. Griffin, M.D.	527
Vick's Floral Guide for 1875	528
Wondrous Strange, Mrs. C. J. Newby	239
Winter Homes for Invalids, J. P. Howe, M.D.	475
Yellow Fever, John M. Woodworth, M.D.	143
Young Folks' History of the U. S., Higginson	570
Mortality Statistics	567, 568
Mort	34
Medical Toadyism, N. Y. Journal of Homœopathy	58
Medical Jurisprudence of the Stokes Case	184
Mental Culture, Nathan Allen, M.D., LL.D.	198
Morbid Impulse	201, 282
Management of Slaughter-houses, E. H. Janes, M.D., and H. C. Lee	289, 377
New York Medico-Legal Society, Clark Bell, Esq.	385

	PAGE
Miasm of the Pontine Marshes	466
Mystification of Quacks	514
Morris, John, M.D., Vaccination	308
" " " Burns and Scalds	409
Mays, J., M.D., Criminal Responsibility	296
Medical Topography of New York	93
Medical Education	331
Meeting of P. H. Association	379
Medico-Legal Society	176, 201
Nitrous Oxide Gas, Prof. F. D. Weisse	24
New Way to Feed Babies	161
New York Public Health Association	85, 162, 509
New Theories of Disease, H. L. Bartlett, M.D.	361
Oatmeal—Bone and Muscle	105
Ollapod, Dr., Concerning College Life	10
Osgood, Rev. Dr., Health and Culture	400
Orton, Edward, Relations of Geology to Water Supply	413
Obituary—Dr. George Derby	225
Ozone	564
Principles of Ventilation, Lewis W. Leeds.	79
Pettenkofer's Theory of Cholera	85
Prospect Park, Brooklyn	106
Pins	133
Pink Eye Amongst Horses, A. Liautard, M.D.	164
Physiology of Intemperance, A. H. Dana.	244
Position of Woman, Nathan Allen, M.D., LL.D.	271
Physical Culture, H. L. Bartlett, M.D.,	305, 460, 492, 546
Perils of the School-room, A. N. Bell, M.D.	433
Perils of the Sea	141
Preventing Smoke	504
Protective Influence of the Atmosphere	545
Parker, S. J., M.D., Defective Drainage	124
Public Health	40, 87, 134, 189, 214, 275, 323, 372, 420, 467, 515, 565
Quarantine	367
Quack Ventilation for the Public Schools.	37
Relations of Hygiene to Practical Medicine, Prof. J. S. Wight, M.D.	49
Relations of Geology to Water Supply, Prof. Edward Orton	413
Relations of Topography to Health, Gen. E. L. Viele	449
Relations of Mortality to Seasons of the Year	263
Rights of the Insane, Julius Parigot, M.D.	66
State Medicine and Public Hygiene	170
" Boards of Health	535
School Diseases, C. R. Agnew, M.D.	241
" Ventilation	243
" Vaccination	40
Science in Life Insurance	253
Sanitary Notes	260
" Inspectors, A. B. Judson, M.D.	351
" Deficiencies, Prof. S. D. Gross, M.D.	419
Sanitary Poetry	466
" Duties of Army Surgeons	426
Schools and School Children	303
Saved through a Novel	350
Salt in the Seas	366
Status of Sanitary Science in the U. S., Stephen Smith, M.D.	414
Staten Island	136
Smith, J. Lewis, M.D., German Measles in New York	162
Smith, J. Lewis, M.D., Diphtheria	509
Smith, Stephen, M.D., Status of Sanitary Science	414

	PAGE
Smith, Stephen, M.D., Concentration of Slaughtering in Cities	193
Smith Eustace, M.D., Hand-Feeding of Infants	444, 505
Summer Travel	140
Slaughter-houses	216
Swill and Sugar Plums	276
Shadows from the Walls of Death	281
St. John's School for Boys	282
Sewage Question, Samuel Leavitt	59, 87
" " C. F. Barnard	344
Sewing Machines	568
The American Aladdin, L. Brandeis	35
Traps and Trapping, L. Brandeis	73
Taking Cold, J. R. Black, M.D.	116
Typhoid Fever, John M. Fox, M.D.	156, 210, 356
Thermometrical Notes in the Study of Disease, H. L. Bartlett, M.D.	255
The Peabody Buildings, London	301
The Care of Canaries	550
The Law of Fatigue	534
Traveling with the Measles	343
Thayer, W. H., M.D., Carbonic Acid	401
Toner, J. M., M.D., Hindrances to Vaccination	443
Typographical Hygiene	37
The Sanitarian and its Contributors	93
Trephining	223
To Contributors	565
To the County Medical Societies of New York	428
Trichinosis	569
Unwholesome Meat, G. T. Angell	265
Utilizing Sewage, C. T. Barnard	295
Unusual Epidemic	281
Vienna Water Supply	78
Ventilation for Health, Jos. Wilson, M.D.	529
Ventilation of Schools, *The Practitioner*	120
Ventilation of Ships	259
Vaccination, John Morris, M.D.	214, 306
Vaccination, Lymph or Crust? Frank P. Foster, M.D.	357
Viele, E. L., C.E., Contaminated Water	370
Viele, E. L., C.E., Relations of Topography to Health	449
Warming and Ventilation, H. Endemann, M.D., Ph.D.	20
Water	23
Waste of Life, A. N. Bell, M.D.	145
What Alcohol Will Do	209
Wilson, Jos., M.D., Drainage for Health	1
" " Ventilation for Health.	529
Walker, Jerome, M.D., Artificial Feeding of Children	16
Walker, Jerome, M.D., Air for Babies	154
Weisse, F. D., Nitrous Oxide Gas	24
Wight, J. S., M.D., Relations of Hygiene	49
Waller, Elwyn, A.M., E.M., Carbolic Acid	337
Water Contamination	331

INDEX TO VOL. III.

	PAGE
A Dog's Sagacity	374
Adams, C. F., The Quack	116
Agnew, C. R., M.D., Children's Eyes	313
" " Effects of School Life upon the Eyes	200
Air and Light, L. Brandeis	228
Allen, Nathan, M.D., LL.D., Coll. Sports.	241
Ames, Azel, Jr., M.D., Protection of School Children	45
American Medical Association	93, 137
American National Life and Trust Co	425
" Public Health Association	381, 420
Amusing the Baby	202
Analytical and Food Department	46, 92, 142, 189, 232, 286, 327
Annual Reports	141, 189, 231, 377, 378, 416, 418
Baby's Cereal Food	46
Bailey, Thos. H., M.D., Water Poisoning as a Cause of Disease	97
Bailey, W. W., The Collection and Preservation of Plants	203
Baker, H. B., Michigan State Board of Health	268
Bayles, J. C., Sanitary House Drainage	49
Bayles, James C., New York Public Health Association	125
Bayles, James C., Waste and Soil Pipes	125
Bell, A. N., M.D., School-Room Stunting	410
" " Yellow Fever and Quarantine	314
Bell, A. N., M.D., Hemlock Poisoning—the Walker Case	117
Billings, J. S., M.D., U. S. A., Hygiene of the U. S. Army	215
Biometry, Moreau Morris, M.D.	178
Borgias of our Kitchens	390
Bowditch, H. J., M.D., Heights and Weights of School Children	201
Boys and their Mothers	345
Brandeis, Leopold, Air and Light	228
" " Impurities in Drinking Water	92
Burns and Scalds, Walter Coles, M.D.	79
Busey, S. C., M.D., Vegetables and Fruits.	1
Butt, Rev. John, "I Thank You."	82
Butter, Detection of Beef Fat or Lard in.	93
California Climate	221
Canned Salmon—How Poisonous	324
Carbonic Acid in Soils	124
Care of the Eyes, D. F. Lincoln, M.D.	193
Carroll, Alfred, M.D., Impurities in Drinking Water	92
Carroll, Alfred, M.D., Preventable Sickness	337, 403
Carroll, Alfred, M.D., Water Poisoning	212
Centennial—Sanitary Precautions	325
Chemistry of Milk	93
Cess-Pools	230
Chair of Comfort	336
Chandler, C. F., Danger in Lead Pipes	61
" " Homes for Laboring Classes	225
Chandler, C. F., Waste and Soil Pipes	125
Cheap Window Ventilation, R. C. Kedzie	39
Chapman, E. N., M.D., Infant Diet	305, 351, 391
Children's Clothing	18
Children's Eyes, C. R. Agnew, M.D.	313
Chloride of Lime, Nature of	331
Cholera and Birds	247
Coles, Walter, M.D., Burns and Scalds	79
Cooling Drinks	240
College Sports, Nathan Allen, M.D., LL.D.	241
Comparative Longevity, A. H. Dana	165
Contagious Diseases	326
Corbally, T. P., A.M., M.D., Value of Health to a City	248, 365
Cosmetics	182
Cowbane and Wild Parsnips, A. B. Stewart, M.D.	189
Crothers, T. D., M.D., Relations of Inebriety to Public Health	398
Crushed White Wheat	336
Culver's Improved Hot Air and Hot Water Combination Furnace	268
Dana, A. H., Comparative Longevity	165
" Relations of Sex to Health	385
Danger of Lead Pipes, Bad Plumbing, etc., C. F. Chandler, C. Pfeifer, M. Morris and others	61
Deepest Well in the World	81
Defective Drainage as a Cause of Disease in the State of New York	19
Defective Nutrition of Children, Jerome Walker, M.D.	108, 172
Detection of Beef Fat or Lard in Butter	93
Devron, Gustavus, M.D., Malarial Fevers, New Orleans	302
Died of Hair Dye	364
Dirt—The Harlem Flats	184
Disease of Lemon Trees	271
Disinfection	279
Dougall, John, M.D., Prevention of Putrefaction	269
Drinking Waters—Impurities in, Alfred Carroll, M.D., Leopold Brandeis	92
Duration of Human Life	91
Eaton, D. B., Homes of the Laboring Classes	145
Eaton, D. B., Homes for the Laboring Classes	225
Education and Heredity	38
Effects of School Life upon the Eyes, C. R. Agnew, M.D.	200
England's Estimate of Public Health	44
English Ivy	267
European Life in India	304
Examination in State Medicine	63
Excessive Death-Rates Among Children, Stephen Smith, M.D	269
Exchanges and Correspondents	384
Fellow Travelers	39
Field, A. G., M.D., Importance of Sanitary Legislation	265
Fire on the Hearth	268
First Mayor of Brooklyn	296
Floating	296
Foods for Babies, Defective Nutrition, Jerome Walker, M.D.	205
Foreign Reports	232, 279, 327, 379
Godwin Parke, Homes for Laboring Classes	225
Gold's New Heater	336
Gray, E. W., M.D., Milk	64
Gymnastics for Schools, S. S. Putnam	199
Hardee, T. S., C.E., Topography and Drainage of New Orleans	297
Harris, Elisha, M.D., Homes for the Laboring Classes	145
Harris, Elisha, M.D., The Sanitarian	87

	PAGE
Harris, Elisha, M.D., Sanitary Association	283
Heights and Weights of School Children, H. I. Bowditch, M.D.	201
Hemlock Poisoning, The Walker Case Summarised, A. N. Bell, M.D.	117
Heredity	177
Homes for Laboring Classes, P. Godwin, D. B. Eaton, C. F. Chandler and Stephen Smith	225
Homes for the People, R. T. Paine	356
Homes of the Laboring Classes, Stephen Smith, Elisha Hains and D. B. Eaton	145
How to Avoid Sewer Gas Poisoning	222
How to Make Good Mucilage	78
Hyacinths in Winter	364
Hygiene of the United States Army—Report on, J. S. Billings, M.D., U. S. A.	215
Indian Treatment of Quacks	134
Infant Diet, E. N. Chapman, M.D. 305, 351,	391
Infant Mortality in London, 1874	272
Ingram, James, Waste and Soil Pipes	125
"Imperial Granum."	46
Impure Milk	142
Impure Water and Street Dirt, D. B. Silliman	231
Kedzie, R. C., M.D., Cheap Window Ventilation	39
Kedzie, R. C., M.D., Preventive Medicine.	86
Lake Mahopac	288
" " The Gregory House	192
Law of Heredity	370
Lead in Potable Waters	134
Lesley's Gothic Furnace	288
Life Insurance	288
" " Documents on Health	324
Lincoln, D. F., M.D., School Hygiene	193
" " " Care of the Eyes	193
LITERATURE:	
A Light and a Dark Christmas, Mrs. Henry Wood	335
A Manual of Diet in Health Disease, T. K. Chambers, M.D.	143
A Manual of Hygeine, C. A. Cameron.	143
Accidents	335
American Clinical Lectures	94
American Clinical Lectures	334
American Philological Association	47
Annie of Gierson, Sir Walter Scott	191
Annual Report of New York Board of Health	286
Annual Report of Cincinnati Board of Health	332
Art of Swimming, "Sargeant" Leahy	333
Aunt Margaret's Trouble, Miss Dickens	238
Bertha's Engagement, Mrs. A. S. Stevens	96
Bureau of Education Circulars	286
Cantho Plasty, C. R. Agnew, M.D.	334
Capillary Bronchitis of Adults, Calvin Ellis, M.D.	334
Care of the Sick	335
Childhood, W. F. Crafts	238
Cholera Epidemic, U. S.	427
Climate of Colorado, Chas. Denison.	334
Climatology of Florida, A. S. Baldwin	238
Compendium of Children's Diseases, Johann Steiner, M.D.	46
Cremation, D. W. Yandell, M.D.	237
Cremation and Burial, J. F. A. Adams	288
Disposal of Slop Water of Villages, and Water Analysis, C. B. Fox.	144
Eating for Strength, M. L. Holbrook.	47
Earth to Earth, F. S. Haden	333
Fragments, W. B. Green	335
Fungi, M. C. Cooke	144
Glory and Hardships of Medical Life, S. D. Gross, M.D.	237
Heart of Midlothian, Sir Walter Scott	191
Heredity, H. Ribot	383
Histology and Histo-Chemistry of Man, H. Frey	94
Illustrated Homes, E. C. Gardner.	235
Illustrated New York, E. B. Treat.	237
Iridotomy, A. W. Calhoun, M.D.	334
Lancing Gums in Infancy, A. C. Hamlin, M.D.	335
Littell's Living Age	96
Longevity, John Gardner	382
Manual of Public Health for Ireland.	94
Mary Stuart, the Queen of Scots, G. W. M. Reynolds	239
Medical Addresses, B. E. Cotting.	237
Medical Department of the University of Pennsylvania, R. G. Comegys, M.D.	191
Medical Register, New York, A. E. M. Purdy	333
Nature and Culture, Harvey Rice.	47
New Hampshire Asylum Report	335
New York Asylum for the Insane Report, A. E. Macdonald, M.D.	337
Otitis, C. R. Agnew, M.D.	334
Paralysis from Brain Disease, H. C. Bastian, M.D.	333
Physician's Pocket and Office Records	48
Pneumo-thorax, Professor Austin Flint, Sr.	238
Popular Resorts, J. B. Bachelder	235
Practical Hints on the Microscope, J. Phin	235
Preventive Medicine, Chas. C. F. Gay	334
Prize Essay on School Hygiene, A. Hutchins	333
Relation of the Nervous System to Diseases of the Skin and New Antipruritic Remedy, L. D. Bulkley, M.D.	334
Report of the Commissioners of Lunacy, Mass., Nathan Allen	47
Report on Public Instruction, Brooklyn	384
Rest in the Treatment of Nervous Diseases, S. W. Mitchell	238
Sanitary Rhymes, A. Power	334
Sex in Industry, Azel Ames, Jr.	144
Six Months Under the Red Cross, G. H. Boyland, M.D.	235
Statistical Atlas, U. S., Gen'l F. A. Walker	426
The Abbott, Sir Walter Scott	335
The American Garden	96
The Brooklyn Journal of Education.	96
The Church Journal and Gospel Messenger	96
The Churchman	96
The Coming Medical Man, D. B. St. John Roosa, M.D.	48
The Countess and the Page, G. W. M. Reynolds	335
The Foggy Night at Oxford, Mrs. Henry Wood	48
The Highland Widow, Sir Walter Scott	191
The Hunted Lover, Mrs. Henry Wood	96
The Mammoth Cave of Kentucky, W. S. Forward, M.D.	190
The Methodist Protestant	96
The Model Physician and Model Patient, H. D. Didama, M.D.	237
The Monastery, Sir Walter Scott	335
The Mysteries of the Court of	

	PAGE
Queen Anne, Wm. H. Ainsworth.	191
The Toner Lectures	95
The Voice in Singing, Emma Seller.	95
The Vox Humana	47
Transactions of Texas State Medical Association	48
Trichinosis, George Sutton, M.D.	334
Utica State Asylum—Report on	237
U. S. Marine Hospital Service, J. M. Woodworth, M.D.	235
Veterinary Science and Police, Geo. Flemmings	234
Vital Statistics, H. B. Baker	47
What a Boy, Julia A. Willis	95
Live Man in a Village	171
Malarial Fevers in New Orleans, Gustavus Devron, M.D.	302
Means of Detecting Alcohol in any Mixture	332
Medical Education	136
" Editors' Association	138
Medico-Legal Society	423
Melmaize	327
Michigan State Board of Health, H. B. Baker, M.D.	268
Milk, E. W. Gray, M.D.	64
Minnesota for Health	224
Monument to Dr. Horace Wells	336
Montclair Sanitary Association	144, 183
Mortality of the Insured	00
Morris Moreau, M.D., Biometry	178
" " " Danger of Lead Pipes	61
Mountain Sanitarium for Pulmonary Diseases	336
Nashville	275
Nature of Chloride of Lime	331
New Jersey Health Commission	45
" " Sanitary Convention	379
New York Public Health Association, Proceedings of	49, 125
New York Produce Exchange	375
Odorless Excavating Apparatus	90
Orient Springs Health Institute	336
"Our Home Institute," Water Analysis of.	232
Outwater's Vaporizer	240
Ozone	287
Paine, R. T., Homes for the People	375
Palette Club—Summer Night's Festival	192
Palisades	240
Partridge, W. E., Waste and Soil Pipes	125
Pat's Criticism—the Quack	116
Pettenkofer, Value of Health to a City	249, 335
Pfeifer, Carl, Danger of Lead Pipes	61
Physicians' Certificate	273
Plants as Doctors	33
Plants, Collection and Preservation of, W. W. Bailey	293
Poisonous Canned Salmon	235
Poisons	391
Power, Alfred, The Skin	135
Prevention of Putrefaction, and Destruction of Contagia, John Dougall, M.D.	259
Preventable Sickness, Alfred L. Carroll	337
Preventive Medicine, R. C. Kedzie, M.D.	86
Proposed Adulteration Act	44
Pub. Health..41, 89, 140, 187, 229, 274, 279, 320, 377,	416
Putnam, S. S., M.D., Gymnastics	199
Quack—Pat's Criticism, C. F. Adams	116
Recommendation for Securing the Healthiness of Houses	34
Relations of Health to Life Insurance	44
Relations of Sex to Health and Longevity, A. H. Dana	385
Salicylic Acid	139
Salt Bath	288
Sanitarian, The, Elisha Harris, M.D.	97
" " New Auspices	384
Sanitary Association, Elisha Harris, M.D.	283
" House Drainage, J. C. Bayles	49
" Legislation, Importance of, A. G. Field, M.D.	255
Sanitary Provision in Public Institutions, Importance of, Nathan Allen, M.D.	163
Sanitary Work	285
School Children, Protection of, Azel Ames.	45
School Hygiene, Wm. C. Wey, M.D.	37
" " Social Science Association	193
School-Room Stunting, A. N. Bell, M.D.	410
Seasonable Food	71
Sermon Making	214
Sewer Gas Through our Chamber Windows	138
Silliman, B. D., Impure Water and Street Dirt	231
Skeptic and the Bird's Nest	162
Skin, The, Alfred Power	135
Smith, Stephen, M.D., Excessive Death-Rates Among Children	289
Smith, Stephen, M.D., Homes for Laboring Classes	225
Smith, Stephen, M.D., Method of Improving the Homes of the Laboring Classes	145
Startling Facts on Sale of Liquors	397
Stewart, A. B., M.D., Cowbane and Wild Parsnips	189
Stewart's Clay Goods	336
Tadlock, A. B., M.D., Vital Statistics	371
Tanneries—Their Relation to Health	323
Temperance Prize Essay	93
"Thank You," Rev. John Butt	82
Time Sickness	211
Tobacco Poisoning	273
Topography and Drainage of New Orleans, T. S. Hardee	297
Trans. Coll., Physicians, Phila.	428
Typhoidal Resorts	138
Unsanitary or Insanitary	288, 336
Value of Health to a City, T. P. Corbally, A.M., M.D., Pettinkofer	248, 356
Vegetables and Fruits, Samuel C. Busey	1
Ventilation for Health, J. Wilson	72, 346
Ventilation of Cupboards	144
Viele, E. L., Water Supply of Towns and Cities	14
Vital Statistics, A. B. Tadlock, M.D.	371
Vital Statistics of Paris	90
Voltaic Armadillo	94
Walker, Jerome, M.D., Defective Nutrition of Children	103, 172, 205
Waste and Soil Pipes, J. C. Bayles, W. E. Partridge, J. Ingraim, Profs. Whiting and Chandler	133
Water Poisoning as a Cause of Disease, Thos. H. Bailey, M.D.	97
Water Poisoning—Typhoid Fever, Alfred L. Carroll, M.D.	212
Water Supply, Brooklyn	136
Water, Sermon on	40
Water Supply of Towns and Cities, E. L. Viele	14
Water Supply as Related to Public Health	324
Wheat	283
Wheaten Flour, New Process	328
Whiting, Prof., Waste and Soil Pipes	125
Wilson, Joseph, M.D., Ventilation for Health	72, 346
Yellow Fever	279
Yellow Fever and Quarantine, A. N. Bell	314

INDEX TO VOL. IV.

	PAGE
A City of Health, B. W. Richardson	24, 68
A Hundred Thousand Homes	148
A Prisoner's Testimony	138
Adams, C. F., Safety of Railroad Travel	122
"Affairs of the Health Office," New York	282
Ailanthus Trees	332
Air, A. Powers, C. B	441
American Medical Association	322
" Public Health Association	39, 509
" Watering Places, H. Hartshorn	256
Analytical and Food Department	44, 90, 137
Anæsthetics and Heart Disease	95
Angell, G. T., Crime	82
Antiseptic, Properties of, Madder	374
Association of Medical Editors	317
Asphalt Drain and Soil Pipes	332
Apples	540
Atmospheric Germ, Theory of Disease	371
Atlee, W. L., Fashion and its Penalties	160
Avena or Oaten Grits	45
Baby's Soliloquy	30
Bailey, F. K., Ventilation of Churches	120
Baker, H. B., M.D., Warning of Diseases	289
Bayles, J. C., Distilled Water for Druggists	44
Bayles, J. C., Excellence in Plumbing Work	305
Bayles, J. C., Sanitary Engineering	553
Beer Drinking—Bad Effects of	23
Bell, A. N., M.D., Relation of Medical Editors to the Medical Profession	309
Bell, A. N., Relation of Unsanitary Conditions to Pauperism, Vice and Crime	400
Bell, Clark, Valedictory Address	31
Berlin Board of Health	477
Brandeis, Leopold, Ky., Shower of Flesh	222
Brewer, Prof., Gases of Decay	547
Brooklyn Annual Reports	135, 378
Brooklyn Nuisance	283
Brooklyn Sea-side Home, J. Walker, M.D.	417
Brooklyn School-Houses, Philo	447, 557
Bulkley, L. D., M.D., Soap	178
Bureau of Vital Statistics, New York	85
Burge, J. H. H., M.D., Infant Diet	268
Cabell, J. L., M.D., Hot Springs, Va	253
California State Board of Health	234
Canned Salmon Again	45
Carbolic Acid	137
" " as a Disinfectant, C. B. White	225
Causes of Insanity, Dr. Clouston	252
Chandler, C. F., Ph.D., Health of New York	60
Chicago Health Report	476
Children	369
Clark, F. C., M.D., Trichina Spiralis	301
Clouston, Dr., Causes of Insanity	252
Conditions of Excellence in Plumbing Work, James C. Bayles	305
Contamination of Drinking Water, A. H. Nichols, M.D.	354
Conviction of Milk Venders	138
Corbally, T. P., State Medicine in Mass	451
Corbally, T. P., A.M., M.D., Deformities and their Relation to Hygiene	386, 433
Crime, G. T. Angell	82
Dana, A. H., Uses of Life Insurance	123, 219
Davies, Wm. G., A.M., B.S., Mysterious Disappearances, etc., in Insurance Cases	165
Deaths, Prof. E. A. Parkes, M.D.; Prof. Henry Letheby, M.B	227
Deformities and Hygiene, T. P. Corbally	385, 433
Detection of Suet Butter	90
Dirty Dogs	546
Distilled Water, J. C. Bayles	44
Donaldson, Frank, M.D., Pulmonary Consumption in Cities	62
Doremus R. Ogden, Milk in its Medico-Legal Aspects	131
Drainage and Water Supply in North Carolina, Prof. W. C. Kerr	39
Earth Closets	368
Education in the United States	77
Effect of the Loss of Consciousness upon the Memory, Prof. F. H. Hamilton	49
Errors in Sanitation	340
Error in Vital Statistics	177
Ess and Esses	348
Ethics in Journalism	143
Eucalyptus	428
" and Poppy, The Sanitarian's Emblem	228
Eucalyptus Globulus	67
Excerpts on Health	223, 370, 560
Factory Acts and Operatives of England	259
Fashion and its Penalties, Prof. Atlee	160
Ferry-Boat Ventilation	137
Florida as a Health Resort, F. D. Lent	529
Foreign Health Statistics	89, 136, 189, 238, 332, 431, 569
Fox, Cornelius, M.D., Pollution of Rivers	13
" " " Typhoid Fever	200
Frankland, Prof., Organic Impurities of Drinking Water	241
Froebel's Kindergarten Theories	245
Gases of Decay, Prof. Brewer	547
Georgia State Board of Health	237
Good Humor	457
Grapes	267
Hashish	374
Hambleton, F., Sewer Gas Poisoning	83
Hamilton, F. H., M.D., Effects of the Loss of Consciousness Upon the Memory	49
Hamilton, F. H., Inaugural Address	87, 563
Hammond, W. A., M.D., Railway Injuries	289
Harris, E., Vital Statistics	395
Hartshorn, H., M.D., Watering Places	256
Has New York a Board of Health?	145
Hawley, J. S., M.D., Infant Diet	63
Health Lift	47
Health of New York, Prof. Chandler, Ph.D.	60
Health; The New Fashion	164
Heat and Water	429
Hints to Nurses	255
Honors	375
Hospital Construction and Organization—The Johns Hopkins Hospital	181
Hospital that Invites Disease	88
"How Dreadful is this Place!"	541
How not to be Sunstruck	377
Imperfect Drainage	274
Impurities of Drinking Water, Microscope	473
Inaugural Address, F. H. Hamilton	87, 563

	PAGE
Infant Diet, J. S. Hawley, M.D.	63
" " J. H. Hobart, Burge, M.D.	268
International Medical Congress	96
Is Medicine a Science?	339
Kentucky Shower of Flesh, L. Brandeis	222
Kerr, Prof., Drainage and Water Supply	39
Kneading Bread	352
Lactometer, The	137
Lambert, T. S., M.D., Oat Meal	275
Lee, Benjamin, M.D., Small-pox; The Cost of a Great Epidemic	43
Lee, Benjamin, M.D., Trials and Triumphs of a Sanitarian	318
Leeds, Lewis W., Has New York a Board of Health?	145
Lent, F. D., Florida as a Health Resort	529
Lepers of Jerusalem, Atlantic Monthly	442
Leverich, S. B., Story of an Entozoon	96
Life Insurance?	443
" " and The Sanitarian	189
" " Important to Examiners	333
Lincoln, D. F., M.D., Sanitary Requirements in School Architecture	481
LITERATURE:	
Achsah, Rev. Peter Pennot	335
Air and its Relations to Life, W. N. Hartley, F.C.S.	432
Alcohol, B. W. Richardson	191
American Philo'l Association	334
Annual Report of the Surgeon-General U. S. Army	46
Appleton's Journal	383
Atlas of Skin Diseases, Duhring	477
Attfield's Chemistry	570
Barnes' Centenary History	141
Bien's International Album	144
Centennial Gazette	192
Climate and Diseases of America, J. D. Schoepff	92
Deutsche Medicin, Wochenschrift	92
Diet and Regimen in Sickness and Health, H. Dobell, M.D.	140
Diseases of Modern Life, B. W. Richardson, M.D.	239
Diseases of the Nervous System, Wm. A. Hammond, M.D.	287
Diseases of the Skin, Henry G. Piffard, A.M., M.D.	334
Dispensaries, Ludlum	570
Dress and Health	384
Fermentation, Schulzenberger	384
Filth Diseases, John Simon	191
Hay Fever, G. M. Beard, M.D.	478
Human Physiology, J. C. Dalton	46
Human Rights, G. J. Ziegler, M.D.	527
Illustrated Annual Register of Rural Affairs	93
In Doors and Out, Oliver Optic	93
Injuries of the Skull, C. C. F. Gay	384
Journal d' Hygiène	92
Kindergarten Education	335
La Gaceta de Sanidad Militar	479
La Revue de Med. et de Pharmacie de l'Empire Ottoman	371
La Science pour Tous	383
Legal Chemistry, A. Naquet	288
Literary Reader, G. R. Cathcart	526
Liver Complaint, M. L. Holbrook	527
Manitou, Col., Mineral Waters, Edwin Solly, M.D.	192
Mass. State Charities Report	239
Materia Medica and Therapeutics, B. Bartholow	526
Medical and Surgical Memoirs, Joseph Jones, M.D.	382
Medical Register, New York	432
Micro-Photographs in Histology	528
Navy Department—Sanitary and Medical Reports	190
New England Journal of Education	92
Opium Eating	93
Philadelphia College of Physicians —Transactions	526
Popular Health Almanac	92
Popular Science Monthly	288
Poisons in Relation to Medical Jurisprudence and Medicine, A. S. Taylor, M.D., F.R.S.	45
Public Health Questions, J. Toner	527
"Public Health"	91
Public Health Magazine	336
Reading Club and Handy Speaker, G. M. Baker	93
Relation of the Sexes, Mrs. E. Duffy	239
Ricketts' Assaying	570
Sanitary Drainage of Houses and Towns, G. E. Waring, Jr.	288
Scientific Farmer	192
Sewerage and Sewage, Utilization, W. H. Corfield, M.A.	91
Skene's Account Book	570
State Medicine in relation to Insanity and Charity, Nathen Allen	143
The Ashbury Twins, Sophie May	96
The Body and its Ailments, Geo. H. Nephys, A.M., M.D.	190
The Chinese Problem, L. Townsend	384
The Great Bonanza	96
The Nursery	91
Theory of Medical Science, Wm. R. Dunham, M.D.	479
Transactions—Cal. Med. Society	143
Trans. Alabama Med. Asso'n	191, 527
Trans. Coll. Physicians, Phila.	528
Trans. Mich. Med. Society	191
Trans. Ohio Medical Society	527
Trans. Penn. Medical Society	140
Trans. Med. Faculty of Md.	92
U. S. Newspaper Directory	480
Use and Value of Arsenic in Skin Diseases, L. D. Bulkley, M.D.	528
Ventilation of Dwellings, Winans	142
Water and Water Supply, W. H. Corfield, M.A.	91
West Va. Medical Student	91
Yellow Fever, G. Dowell, M.D.	526
Louisiana State Board of Health	233
Low Mortality	136
May Good Digestion Wait on Appetite? Richard McSherry, M.D.	193
McSherry, Richard, M.D., May Good Digestion Wait on Appetite?	193
McSherry, Richard, M.D., The Sanitarian	337
Medical Jurisprudence and Surgery	23
Medico-Legal Science, J. O'Dea, M.D.	449, 493
Medico-Legal Society of New York	81, 210, 214, 279, 289, 353, 449, 493, 503, 563
Meteorological Observations, Prof. Rogers	110
Michigan State Board of Health	336
Milk in its Medico-Legal Aspects, Prof. R. Ogden Doremus	131, 214
Minnesota State Board of Health	237
Modern Prescriptions	321
Morris, J., M.D., Scarlatina	441
Mysterious Disappearances, etc., in Insurance Cases, Wm. G. Davies, A.M., B.S.	165
Natural History of a Scold	287
New Haven	380
Newspapers at the Centennial	469
New Doctors	185
New Methods of Heating, L. B.	12
New System of House Drainage	216
New York Annual Report, 1873–'74	186
" " Heat and Water	429
" " Medico-Legal Society	192
" " Milk	134
" " The Affairs of the Health Office	282
Nichols, A. H., M.D., Drinking Water	354
Oath of Pharmacists and Modern Prescriptions	321
Oatmeal, T. S. Lambert, M.D.	275
Obit, Thomas M. Logan, M.D.	144

	PAGE
O'Dea, J. J., M.D., Med.-Legal Science	449, 493
Organic Impurities of Drinking Water, Prof. Frankland	241
Our Drains	1.0
Parkes on the Progress of Hygiene	370
Peck, E. F., M.D., Shade Trees in Cities	421
Perils of Massing Populations in Cities, Prof. Stephen Smith, M.D	59
Pettenkofer, Value of Health to a City	17, 149
" Lectures on Hygiene	223
Philadelphia and the Centennial	524
" Health of	524
Philo, Brooklyn School-Houses	447
" School Children's Rights	557
Pie Eaters and Shakers	277
Poisoned by a Hat	560
Pollution of Rivers, Cornelius Fox, M.D.	13
Poor Babes	378
Powers, A., C.B., Air	441
Puerperal Fever	372
Public Health, 40, 186, 281, 292, 328, 377, 429, 475, 523, 568	
Pulmonary Consumption in Cities, Prof. Frank Donaldson, M.D	62
Railway Travel, Charles F. Adams, Jr	122
Railway Injuries of the Spine in their Medico-Legal Relations, W. A. Hammond, M.D	289
Rat Traps	16
Regulations of Work in Prussian Mines	373
Relation of Medical Editors to the Medical Profession, A. N. Bell, M.D	309
Relations of Unsanitary Conditions to Pauperism, Vice and Crime, A. N. Bell.	400
Relief for Sick Children in New York	327
Report of College of Physicians, Phila	115
Report of Resident Physician of New York.	106
Report of Sanitary Com. of Philad'a	110
Richardson, B. W., City of Health	34, 68
Rogers, R. C., Meteorological Observations.	110
Rules for Visiting the Centennial	300
Salt Air	331
Salting Streets for Removal of Snow	97, 106
Sanitarian, Associate Editor	285
" Prospectus for Vol. IV., 1876	48
" Richard McSherry, M.D	337
Sanitarium in the Himalayas	567
Sanitary Appliances—the Centennial	427, 458
Sanitary Engineering at the Centennial, J. C. Bayles	553
Sanitary Record, The	143
" Requirements in School Architecture, D. F. Lincoln, M.D	481
Sanitary Resorts, W. C. Van Bibber, M.D.	1
Sausage Poisoning	90
Sayre, Lewis A., M.D., Report of	109
Scarlatina in Baltimore, J. Morris, M.D	541
Scarlet Fever Contagion and Mischievous Effects of Carbolic Acid	89
School Children's Rights	557
School-House Lighting, Trelat	544
School-Room Poisoning in New York	210, 503
Sea Bath at Home	420
Sewer Gas Poisoning, F. Hambleton, M.D.	83
Sewerage of Saratoga, McEwen, M.D	398
Shade Trees in Cities, E. F. Peck, M.D	421
Schultz, J. S., Utilization of Refuse	261
Small-Pox on the Tramp	88
Small-Pox; the Cost of a Great Epidemic, Benjamin Lee, M.D	43
Smith, Stephen, M.D., Perils of Massing Population in Cities	59
Soap; Its Qualities and Uses, L. D. Bulkley, M.D	178
St. Louis, Health of	477
State Medicine in New York	358, 367, 398
State Medicine in Mass., T. P. Corbally	461
Story of an Entozoon, S. B. Leverich	96
Stuart, A. B., Ventilation of Dwellings	521
Sunshine	446
Tadlock, A. B., A.M., M.D., White Cliff	246
Tea and Coffee	76
Trelat, M., School-House Lighting	544
Trials and Triumphs of a Sanitarian, B. Lee	318
Trichina Spiralis, F. C. Clark, M.D	301
Trichinous Pork, Use of	224
Typhoid Fever, Cornelius B. Fox, M.D	200
Unsanitary or Insanitary	94, 144
Uses and Abuses of Life Insurance, A. H. Dana	123, 219
Utility Tables	47
Utilization of Refuse, J. S. Schultz	261
Valedictory Address, Clark Bell, Esq	31
Valley of the Hot Springs, Va., as a Summer Sanitarium, J. L. Cabell, M.D	253
Value of Health to a City, Dr. Max Von Pettenkofer	17, 149
Van Bibber, W. C., M.D., Sanitary Resorts.	1
Vassar College	130
Vegetable Physiology	373
Ventilation of Churches, F. K. Bailey	120
Ventilation of Dwellings, A. B. Stuart	521
Views of a Practical Milk Dealer	139
Vital Statistics—Mutual Life Insurance Company	395
Vital Statistics—New York	85
Virchow's Views of Typhoid Fever	224
Walker, J., M.D., Brooklyn Sea-Side Home.	417
Warning of Contagious Diseases	304
Westchester Co. Med. Society	570
What a Plant Did	508
What Shall we Eat?	570
White Cliff, Tenn., A. B. Tadlock, M.D	246
Wilson, Joseph, M.D., Yellow Fever	344
Wine for the Stomach's Sake	199
Wisconsin State Board of Health	238, 524
Wister, C. J., Jr., Sanitary Com. of Phila.	106
Yellow Covered Hams	472
Yellow Fever, Joseph Wilson, M.D	344

INDEX TO VOL. V.

	PAGE
Adulteration of Bread	71
Air, Temperature and Humidity of, at Different Heights, H. E. Hamberg	545
Antiseptics in Surgery	40
Affections of the Eyes, C. R. Agnew	118
Adams, J. Q., Sanitary Regulations, Putnam County	460
Allen, Nathan, M.D., Vital Statistics	241
American Assoc'n for Cure of Inebriates	429
American Medical Association	322
American Medical Editor's Association	329
American Public Health Association, Proceedings....498,	502
Arrest of Zymotics, E. G. Janeway	404
Bad Air	110
Bermuda....42,	93
Black, J. R., M.D., Public Health Reform.	1
Brooklyn and Her Precincts....372, 379,	421
Brooklyn's Calamity—Burning of Theatre	42
Blind Persons in New York	288
" " Proportion of to Population, R. R. McIlvaine	160
Brooklyn Rink for Roller Skating	287
Bell, A. N., State Board of Health for New York, and some of the Reasons for it	132
Bell, A. N., Hygiene of Passenger Vessels.	145
" " Pauperism, Vice and Crime	511
" " Tuberculosis in Milch Cows	337
" " Cellars	558
" " Pavements	562
Borax and Borax Soap....261,	524
Birthday Party	170
Bowditch, H. I., Address—Am. Med. Ass'n	322
Battery Baths	381
Bartlett, W. B. Diseases in Country Houses	410
Bailey, T. H., Malarial Diseases, Putnam Co.	455
Bradford, E. H., Health of Rowing Men	529
Breathing of Foul Air, Effects of	553
Bread, Adulteration of	71
Boothly, E. L., M.D., Vital Statistics	539
Buenos Ayres, Vital Statistics of	229
BIBLIOGRAPHY:	
Transactions Texas Med. Assoc'n	44
" Tenn. Med. Society	45
" D. C. Med. Society	48
" Med. Faculty of Md.	95
" Am. Gynecological Soc.	333
Utica Lunatic Asylum Report	45
Smithsonian Contributions	46
Living too Fast (Adams)	47
Young America Abroad (Adams)	47
Hours with John Darby	47
Trail Hunters (Cozzens)	47
Florida (Sidney Lanier)	92
Frederick Froebeld (Kriege)	47
Flaxie Frizzle (Sophie May)	48
Reading Club (G. M. Baker)	48
Annual Register, 1877	48
Reparative Surgery (Buck)	93
Healthy Skin (Eras. Wilson)	94
Electric Bath (Schweig)	94
Coughs and Consumption (Dobell)	94
Public Libraries in the U. S. A.	95
Water Supply (Brower)	95
American Naturalist....96,	526
Littell's Living Age	96
Home Journal	96
Commissioner of Education Report	142
Magazine of American History..143,	284
Diseases of the Skin (Duhring)..143,	285
International Review....143,	569
Cleveland Health Journal	144
Cruelty to Animals, Prevention	191
Cruelty to Children, Prevention	144
Phrenological Annual	144
Scholar's Handbook (Tegetimier)	144
Vivisection	191
Nutrition (J. H. Bennet)	192
Insane, Care of, Reports on	284
Bureau of Med. and Surgery	235
Health Resorts, Europe and Africa	236
Bergmen vs. Volker (Gay)....236,	287
State Med. Society Transactions	237
Public Health Manual (Parkes)	429
Legal Medicine	430
Medical Register, N. Y.	431
Sanitary Engineering (Denton)	478
" " (Latham)	525
Sanitary Conditions in City and Country Dwellings (Waring)	480
Toner Lectures	480
Scenes and Reminiscences of the Civil War (Walke)	381
Critical History of the American War (Mahan)	381
Marine Hospital Service Report	382
Public Baths (Metcalfe)	382
Fruit and Bread (Schlickeysen)	383
Vaccination (Chapin)	384
Delusions (Beard)	384
Popular Science Supplement....283,	527
Life Insurance Question (Lewis)	383
Mothers and Daughters (Verdi)	285
Winebibbers' Temperance Society	284
Notes on Burning Theatres	286
Medical Libraries of Boston	286
Kidneys, The (Fowler)	286
Syphilis (E. L. Keye)	287
Index N. Y. Medical Journal	287
Beauty (Soziuskey)	525
Vick's Illustrated Monthly	526
Functions of a General Police Force for Extinction of Fires	527
Notes on Epidemiology	528
Public Health (A. G. Field)	528
Microscope, How to Use (Phin)	569
Action of Alcohol (Richardson)	569
Syllabus of Lectures on Anatomy and Physiology (Stowell)	569
Kindergarten Guide (Kraus)	567
Choice of Pursuits (Sizer)	568
Physician's Vade Mecum (Wood)	559
Consolation from Statistics	565
Civic Cleanliness, E. H. Janes	11

	PAGE
Calisthenics, Philo	37
Corbally, T. P., Deformities and Hygiene.	73, 214
Conservative Medicine and the Mission of The Sanitarian, E. Harris	126
Chadwick, Edwin, Esq., with Portrait	176
" " " Healthy Houses	446
Cabell, J. L., The Sanitarian	185
Comparative Mortality Statistics	252
Carroll, A. L., Plea of Insanity	258
Confidential Communications to Physicians	269
Corrigenda	270
Crabs	272
Constantinople	281
Chamber of Life Insurance Reports	314
Cabell, J. L., Etiology of Enteric Fever	326
Comegys, C. G., State Medicine	327
Cistern Water, G. E. Waring, Jr	334
Cremation of Garbage	233, 334
Criminality, W. G. Stevenson	353, 390
Causes of Disease, W. R. Bartlett	410
Civil Malpractice and Surgical Jurisprudence, T. P. Corbally	504
Cincinnati School-Rooms	521
City of Health—Garden City, "Long Island"	211
Corbally, T. P., Civil Malpractice	410
" " Deformities and Hygiene.	73, 214
" " House Drainage	509
" " Pettenkofer	367
" " Virchow	469
Cow Disease	522
Directions for Preventing the Spread of Infectious Diseases, J. M. Maclagan	13
Diseases of our own Causing	72
Deformities and their Relation to Hygiene, T. P. Corbally	73, 214
Disinfectants	90, 110, 380, 477
Disinfecting Chamber, Philadelphia	138
Duty of Health Department, Moreau Morris	162
Danger of Sewage, P. G. Robinson	324
Disease and Damp Soils—Public Health	537
Eastman, H. G., Water Supply, New York	51
Eggs, How to Preserve	463
Episcopal Longevity	280
Experts in Legal Proceedings, J. A. Morgan	218
Enteric Fever, Etiology of, J. L. Cabell	326
Errata	336
Eucalyptus	352
Educational Notes, Richard McSherry	362
Encaustic Tiles	468
Florida's Attractions for Winter	92
Foul Air, Effects of Breathing	553
Foreign Health Statistics	41, 85, 137, 186, 232, 276, 332, 372, 428, 476, 519
Fire on the Hearth	43
Fatal Steam Boiler Explosion	114
Fire-proof Buildings, E. F. Peck	171
Foreign Hospitals, R. R. McIlvaine	303
Fishy Odor of Water	334
Fruit, Preservation of	538
Faulty Menu of Boarding-Schools, H. P. Fowler	481
Farr, Wm., M.D., F.R.S., D.C.L., Portrait	253
Female Chemist	371
Fowler, H. P., Faulty Menu of Schools	481
Flowers, How to Preserve and Restore	257
Fetid Feet	445
Gihon, A. L., Sanitary Reform in Ship Life	97
Garrish, J. P. Necessity of Increased School Accommodations	189
Gardner, J. T., Relations of Topographical Surveys and Public Health	385
Griffiths, W. C., Variola Vaccination	407
"Go South for Winter"	566
Hecker's Self-Raising Flour	566
Ham Curing	537
Hamilton, F. H., Medico-Legal Society	117
Harris, E., Conservative Medicine and the Mission of The Sanitarian	126
Harris, E., Results of Legislation on Public Health	327
Health Better than Wealth	213
How a Woman Orders a Chest	308
Haupt, Lewis M., Street Pavements	309
Hunt, E. M., State Medicine	325
How to Keep Cool of Hot Nights	331
House Drainage, T. Pridgen Teale	509
Healthy Houses, Edwin Chadwick	446
Hanging Baskets and Window Boxes	474
Health of Rowing Men, E. H. Bradford	529
Hygiene at Amherst Coll. Prof. Hitchcock	547
Havana, Vital Statistics of	376
Insanity in the United States	20
" Plea of, A. L. Carroll	258
Improved Garbage Boxes	44
Importance of State Boards of Health	183
Influence of Civilization on the Duration of Life, C. T. Lewis	193
Influence of Valleys on Health	492
Janes, E. H., Civic Cleanliness	11
" " Sanitary Questions Concerning Abattoirs and Slaughter Houses	315
Jennings' Sanitary Appliances	91
Jewell's Cereal Food	190, 556
Janeway, E. G., Arrest of Zymotics	404
Kerosene Lamps	172
Kindness to Animals	348
Longevity of Invalids	81
Life Insurance Companies	82, 129
Life Insurance Investigation	230
" " on Trial	184
" " Litigation	313
Lactometer Milk	86
Lewis, C. T., Influence of Civilization on the Duration of Life	193
Loring, E. G., School Hygiene	204
Leaden Pipe for Distributing Water for Domestic Purposes	280
Light in Stables	312
Litigation of Life Insurance Claims	313
Laws of Heredity, J. R. Black	326
Living Without Food	459
Legal Dilemma	270
Lessons on House Drainage	491
Madeira as a Health Resort	154
Made Dishes	546
Maclagan, J. M., Directions for Preventing the Spread of Infectious Diseases.	13
Medico-Legal Society Proceedings	21, 117, 239, 336, 508
Morgan, Jas. Appleton, Personal Identity.	21
" " " School Hygiene	155
" " " Experts in Legal Proceedings	268
Marine Hygiene of Passenger Vessels, A. N. Bell	145
Milk-Beer, Journal d'Hygiene	153
Madeira as a Health Resort	154
McIlvaine, R. R., Proportion of Blind to Population	160
McIlvaine, R. R., Foreigh Hospitals	303
Morris Moreau, Duty of Health Department	162
Milk of Magnesia	190
Miller, J. F., School Hygiene	208
Milwaukee Health Report, 1876	279
More About Garden City as a City of Health	273
Marriage in Ireland	335
McSherry, Educational Notes	362
Medical Society of the State of New York	373
Murray's Charcoal Tablets	524
Malarial Diseases of Putnam County, N. Y., T. H. Bailey	456
Massachusetts State Board of Health	464
Mortality of Assured Lives in England	83
Model Tenement House	253

	PAGE
Medicine in Kentucky	288
Nassau as a Winter Resort	93
Nashville, Tenn	565
New York Vital Statistics, 1876	86
" Health Officer's Report	115
" Public Charities and Correction, S. A. Raborg	289
Necessity of Increased School Accommodations, Wm. Owen and J. P. Garrish.	158
Nervousness and Nervines	163
Newell, T., What Changes Does Physiology Demand in our School System ?	164
Napier, Lord, Sanitation in India	210
New Hydraulic Elevator	380
Nicotine	403
O'Sullivan, R. J., School Hygiene....124,	209
Out-door Sleepers	292
Only a Baby	453
Opium Antidote	287
Pavements, A. N. Bell	562
Personal Identity, James Appleton Morgan	21
Public Health....41, 85, 137, 186, 282, 276, 332, 372, 427, 475, 519,	564
" " Reform, J. R. Black	1
"Philo," School Room Crowding	111
" Calisthenics	87
" School Luncheons	452
" Sanitary Knowledge for Children	271
Philadelphia, Progress of Sanitary Work	138
Prize in Industrial Hygiene	128
Probabilities of Living to be 100 years old —The Longest Lived People	131
Peck, E. F., Fire-proof Buildings	171
Population of the Earth and Progress of Hygiene	175
Physical Benefit of Sunday	182
Plea of Insanity, A. L. Carroll	258
Political Influence, Simon Sterne	301
Population of Holland	336
Pauperism, Vice and Crime, A. N. Bell	511
Preservation of Fruit	539
Public Schools of Cincinnati	477
" " Aid Society	526
Pettenkofer, Max, Josef V., with Portrait, T. P. Corbally	367
Poor and the Vicious	293
Pine Tar Soap	567
Raborg, S. A., Charities and Corrections	289
Revision U. S. Pharmacopœia, E. R. Squibb and H. C. Wood	323
Robinson, P. G., Danger of Accumulated Sewage	324
Results of Legislation on Health, E. Harris	327
Rocky Mountain Association	331
Relation Between Topographical Surveys and Public Hygiene, J. T. Gardner	385
Remarkable Artesian Well	389
Ray, Isaac, Testamentary Capacity	433
Sanitary Advertisements	336
Sanitary Questions Concerning Abattoirs and Slaughtering, E. H. Janes	315
Sanitary Carbon	10
Sanitary Progress in Germany	64
Sanitary reform in Ship Life, A. L. Gihon.	97
Sanitary Knowledge for School Children.	371
Sanitary Inspection of Schools, W. C. Wey	408
"Sanitary Regulations" of Putnam County, N. Y., J. Q. Adams	460
Sanitation in India, Lord Napier	210
Sanitarian, The 185, 288,	554
Service Pipes and Water Distribution in City Houses, J. C. Bayles	43
Safety of Ships and Those Travel in Them, J. M. Woodworth	65
Sunlight Necessary to Health	70
State Board of Health for N. Y.	88
State Board of Health for N. Y., and Some of the Reasons for it, A. N. Bell..182,	182
State Boards of Health	225
Small-pox	89
School-Room Crowding—Brown's Dream.	111
School Hygiene, F. H. Hamilton	117
" " J. A. Morgan	155
" " E. G. Loring	204
" " J. F. Miller	208
" " R. J. O'Sullivan	209
School Luncheons, "Philo"	452
Stewart Memorial Church	275
Sterne, Simon, Political Influence	301
Street Pavements, Lewis M. Haupt	309
" " J. P. C	419
Squibb, E. R., U. S. Pharmacopœia	323
State Medicine and Pub. Hygiene, E. M. Hunt	325
State Medicine, C. G. Comegys	327
Statistics of Deaf Mutes	335
Santa Barbara as a Health Resort, A. B. Stuart	349
Stevenson, W. G., Criminality	353
Superb Ventilation	361
Solubility of the Salts of Lead	386
Sewer Gas Traps 380,	428
Surf Bathing at Long Branch	380
Sewerage of Atlanta, Ga	424
Stoddard, E.V., Typhoid Infection of Drinking Water	454
Sensible Editor	384
Simon Testimonial Fund	527
Salting Streets Forbidden	192
Smithsonian Institution	262
Sound Learning	525
Teachers, Early Death of	314
Three Good Houses	173
Toner, J. M., Water Supply	255
Tin-Lined Iron Pipe	261
Tuberculosis in Milch Cows, A. N. Bell	337
Toxicology—Salts of Copper	379
Testing Flour	503
Testamentary Capacity, Isaac Ray	433
Typhoid Fever, Relation of to Contaminated Well Water	522
Typhoid Infection of Drinking Water, E. V. Stoddard	454
Temperature and Humidity of the Air at Different Heights, H. E. Hamberg	545
Toledo Board of Health, A. W. Fisher	565
Unfortunate Women	306
Vessels Lost and Missing in 1876	152
Village Drainage	12
Vanderpoel, S. O., N. Y. Quarantine	115
Vital Statistics...86, 188, 228, 229, 277, 376,	544
" " Nathan Allen	241
" " E. L. Boothly	539
" " of Deaf Mutes	335
Variola Vaccination, W. C. Griffiths	407
Virchow, Rudolf, with Portrait, T.P.C	469
Vicious Plaster	321
Warming Churches, Schools and Dwellings	566
Water Supply of New York, H. G. Eastman	51
" " of Cities, J. M. Toner	255
Water Filters	379
Woodworth, J. M., Safety of Ships and Those who Travel in Them	65
Warming Street Cars	90
Washstands and House Drain-Traps	90
Winter Health Resorts	92
Watch the Children's Feet	125
Worse than the Fever	377
What Changes does Physiology Demand in our School System, T. Newell	164
Wood Rendered Incombustible	172
Woodward's Soil-Pipe Valve	190
What should be the Policy of a Great City towards its Poor ?	294
Wood, H. C., U. S. Pharmacopœia	324
Waring, G E., Cistern Water	334
Wey, W. C., Sanitary Inspection of Schools	408
Yellow Fever	226
" " Case in New York	520
Zymotic Diseases in New York	454

INDEX TO VOL. VI.

PAGE

Agricultural Production from Town Sewage, E. Chadwick, C.B. ... 224
Antiseptic Surgery ... 140
Art Education of Women ... 177
Asphalt Pavements, A. N. Bell, M.D. ... 178
Alcoholic Treatment of Diphtheria, E. N. Chapman ... 283
Allen, N., M.D., Prevention of Disease, Insanity, Crime and Pauperism ... 297
American Medical Association ... 324
" " College Association ... 330
" " Editors' Association ... 330
Angell, E. C., Sunlight and Solarization .. 433
" " Inunction and Manipulation. 481
" " Hot-Air, Electric and Roman Baths ... 529
American Public Health Assoc'n..472, 517, 564
Apothecary, The ... 547
Bermuda ... 22
Brooklyn ... 42, 372
Brooklyn Drinking Water and Hempstead Filth ... 322
Brooklyn Health Authorities ... 414
Brooklyn Rapid Transit ... 414
British Empire ... 118
Bromo-Chloralum ... 140
Bogus Diplomas ... 142
Bell, A. N., Garden City ... 107
" " Unsanitary Condition of Schools. 172
" " Long Island and Rapid Transit.. 279
" " Electric Lighting ... 407
" " Wash Basins and Water Closets. 556
Bartlett, W. R., M.D., Hygiene of the Individual as Related to the Nation ... 241
Brooklyn and her Board of Health, T. P. C. 262
Brainard, Cephas, Esq., Relation of Law and Medicine ... 270
Brooklyn's Annual Stench ... 282
Burning Oils ... 288
Black, J. R., Hygiene and Therapeutics 498
Chadwick, E., Present Position of Sanitary Science ... 12, 49, 154, 381
" Powers of Sanitation ... 256
" Agricultural Production Obtainable from Town Sewage ... 224
Climate of Florida ... 37
Chinese Bath-House ... 70
Cross and the Crescent ... 118
Cabell, J. L., M.D., State Medicine ... 180, 337
California State Board of Health ... 181
Cathedral of the Incarnation, Garden City. 194
Chicago, Annual Health Report ... 238
Congress Internationale d'Hygiene de Paris ... 425
Corbally, T. P., M.D., E. A. Parkes ... 81
" " Brooklyn and Her Board of Health ... 262
Corbally, T. P., Congress Internationale d'Hygiene ... 425
Corbally, T. P., Mass. State Board of Health. 500
" " Sanitary Condition of Paris. 533

PAGE.

Contagiousness of Phthisis, Dr. Tappenier ... 358
Cathedral Schools, Garden City ... 331
Cost of Drinking Habits, Dr. E. Young ... 456
Convalescence ... 457
Death-Rates..41, 91, 139, 186, 236, 285, 332, 370, 417, 467, 523, 567
" Foreign ... 41, 91, 139, 187, 235, 378, 421, 468, 522
Dangerous Advice About Collars ... 42
Death-Traps in New York, T. J. Nealis ... 130
Death in the Dishcloth ... 164
Donnelly, Mrs. E. O., Nil Desperandum .. 252
Diet ... 261
Dansville Rest Cure ... 288
"Doctors" ... 307
Diseases of the Ear from Bathing, Samuel Sexton, M.D. ... 315
"Dust on Your Glasses," Maud Manning. 357
Dangerous Funerals ... 374
Expert Testimony, J. F. Miller ... 59
Eucalyptus, Prof. Samuel Lockwood ... 235
Enemy in the Air, A. L. C ... 253
Essex Water Supply ... 297
Explosive Dust ... 356
Education in the United States ... 385
Eller, Max F., Medical Jurisprudence of the Romans ... 400
Electric Lighting in its Sanitary Aspect, A. N. Bell ... 407
Fox, C. B., M.D., Why Should the Existing Worthless System of Registering Sickness be Longer Perpetuated? ... 57
Florida, J. Wofford Tucker, Esq ... 126
Fine Flour ... 162
Fletcher, Mrs., The Woman's Hotel ... 276
Fatal Occupation, Fork Grinders ... 359
Garden City (with plate), A. N. Bell, M.D. 197
Garden City Sewage Works—Illustrated .. 183
Garden City's Fruitful Fields ... 473
Gowanus Canal Nuisance ... 373
Graham Flour ... 449
Hamilton, F. H., Medico-Legal Society: Its Status and Scientific Aspects ... 24
Hygiene in America, Bowditch ... 135
Hygiene of the Individual as Related to the Nation, W. R. Bartlett, M.D ... 241
Hygiene in Geology and Agriculture, A. B. Tadlock, A.M., M.D ... 289
Health and Talent ... 171
Henry, Prof., What is Heat Lightning? ... 306
Henry Joseph, In Memory of ... 331
Health of School-Teachers ... 353
Heat Lightning, Prof. Henry ... 306
Hospital Laundry Machinery ... 459
Hygiene and Consumption, Dr. Holland .. 399
Holland, Dr., Hygiene and Consumption .. 399
Holland, Dr., Legislation Against Tramps. 499
Haven, E. O., D.D., Moral Culture ... 455
Hot-Air, Electric and Roman Baths, E. C. Angell, M.D. ... 529

PAGE.

Hygiene and Therapeutics, J. R. Black.... 498
Indiscriminate Medication..... 80
Influence of the Movement of Subterraneous Water on Health, Baldwin Latham 8
Intoxicating Liquors..... 216
International Sanitary Congress..... 379
Intervention of Physicians in Education, E. Seguin, M.D..... 450
Inunction and Manipulation, E. C. Angell. 481
Index..... 571
Jennings's Sanitary Inventions..... 42
Jewish Mode of Slaughtering Animals.... 318
Knowledge..... 115
Knoxville Health Reports..... 188
Kansas Society Transactions..... 191
Kings County Alms House..... 221
Latham Baldwin, Influence of Movement of Subterraneous Water on Health... 8
Lunacy..... 125
Louisiana State Board of Health..... 187
Long Island and Rapid Transit, A. N. Bell. 279
" City Nuisance.....371, 414, 466
" " Summer Resorts..... 380
Lactopeptine..... 497
Legislation Against Tramps, Dr. Holland. 499
LITERATURE:
How We raised Our Baby..... 44
Sanitary Conditions of Portland.... 45
The Treatment of Diphtheria, E. N. Chapman, A.M., M.D..... 46
Winter Resorts, Appleton..... 46
Changes in New England Population, Nathan Allen, M.D., LL.D. 47
Retarded Dilitation of the Os Uteri in Labor, A. H. Smith, M.D.... 49
Moral Insanity, H. M. Bannister.... 47
Letters to Women, Joel Shew..... 47
Education and Labor, M. A. Newell. 47
Littell's Living Age..... 48
American Naturalist..... 48
Barnes's Educational Monthly..... 48
"The Sheltering Arms"..... 48
Transactions of the International Medical Congress of Philadelphia, J. Ashurst, A.M., M.D.... 93
Hospitals, W. G. Wylie, M.D..... 93
Hay-Fever or Pollen Poisoning, E. J. Marsh, M.D..... 94
Public Hygiene, J. F. Montgomery.. 94
International Review.95, 191, 288. 382, 479
Economical Homes for the Working Classes..... 95
Annual Register of Rural Affairs... 95
The Philosophy of School Discipline 96
The Department of Agriculture.... 96
Public Health..... 96
Forensic Medicine and Toxicology, W. B. Woodman, M.D..... 140
Elements of Geology, J. Le Conte... 141
The Plumber and Sanitary Engineer 143
Brainard's Musical World..... 143
Quarantine, J. M. Woodworth, M.D. 143
Vick's Illustrated Magazine..... 191
The American Garden..... 191
Cornwall's Patent Broiler..... 95
Scales..... 191
Ohio Medical Society Transactions.. 333
Transactions of College of Physicians, Philadelphia..... 333
The Magazine of American History. 334
Proceedings of the Medical Society of the County of Kings..... 334
Coughs and Colds, E. S. Thompson. 334
State Regulation of Vice, A.M.Powell 335
Pettengill's Newspaper Directory.. 335
Godey's Lady's Book..... 335
Atlas of Skin Diseases, Duhring.336, 477
Lunsford P. Yandell's Eulogy, T. S. Bell, M.D..... 336
Old Age: Its Diseases and Hygiene, L. P. Yandell, M.D..... 336

PAGE.

Future of Sanitary Science, B. W. Richardson, M.D..... 336
Reference and Dose Book, Leonard. 336
Illinois State Medical Register..... 336
" " Board of Health..... 416
Vital Statistics: Mutual Life Ins. Co., New York..... 364
Wisconsin State Board of Health... 374
Minnesota State Board of Health... 376
Reading, Pa., Board of Health Report 377
Temperance and Republican Institutions, Rev. Joseph Cook..... 381
Medical Register of New York..... 382
Parkes' Practical Hygiene, Edmund A. Parkes, M.D., F.R.S. 382
House Drainage and Water Service, James Bayles..... 382
Hereditary Influence of Alcohol, Willard Parker, M.D 384
New Jersey State Board of Health.. 415
Charleston Health Report..... 418
Toledo Health Report..... 419
Baltimore Health Report..... 420
Richmond Health Report..... 421
Education in the United States..... 385
Source of Muscular Power, Austin Flint, Jr., M.D..... 427
Pneumo-Dynamics, J. M. Garland.. 428
"Golden Rule"..... 428
Moral and Social Science in Public Schools..... 429
Physics of the Infectious Diseases, C. A. Logan, M.D 430
House Air, Frank Donaldson, M.D.. 430
Independent, The..... 431
Minerals, Specimens, etc..... 431
Heating and Ventilation — Johns Hopkins Hospital..... 458
Hospital Laundry Machinery..... 459
Germ Theory of Disease, Maclagan. 460
Visions: a Study of False Sight, E. H. Clarke, M.D..... 462
Population of the City of Providence 463
Chicago Health Report..... 464
Dayton Health Report..... 465
Rochester Water Supply..... 465
Appleton's School Books..... 475
Two Addresses, George Müller..... 475
Tramps, Prof. Wayland..... 475
What am I? J. M. Bodine, M.D..... 475
Electric Lighting, Hippolyte Fontaine..... 475
Sewer Gas and House Drainage, Henry Masters..... 476
Swinton's School Books..... 476
Cathcart's Literary Reader..... 476
Townsend's Civil Government..... 477
Fowne's Manual of Chemistry..... 477
Gynecological Transactions, Vol. II. 478
Labor and the Republic..... 479
The World's Fair..... 480
New England Journal of Education. 480
Bibliotheca Medica..... 480
Borax Soap..... 480
Packer's Tar Soap..... 480
Massachusetts State Board of Health 500
Boston Health Report..... 521
Trans. Georgia Medical Association. 524
" Medical Association of Ala. State Board of Health..... 525
Atlantic Isl'ds Resorts for Health and Pleasure, S. G. W. Benjamin.... 526
Sanitary Examination of Water, Air, and Food, C. B. Fox, M.D..... 527
Gray's Anatomy..... 527
Rectal Medication, W. Bodenhamer. 528
Deterioration and Race Education, Royce..... 568
Medico-Legal Society Proceedings....1, 24, 59, 119, 212, 361, 401, 504
Medico-Legal Society: Its Status, Purposes,

PAGE.

etc., F. H. Hamilton and George H. Yeaman 24
Medical Jurisprudence of the Romans, M. F. Eller 400
Miller, J. F., Expert Testimony 59
Modern Homœopathy 88
Mental Responsibility, E. C. Mann...119, 165
Medical Society of the State of New York. 132
Maryland's Public Charities, Reformatories and Prisons 137
Mining Mortality 161
Money Value of Lives 169
Morris, John, M.D., Pure Water 170
Molière, Thermo-Electric Baths 191
Milwaukee Annual Health Report 237
Magnesia 239
Medical Society Transactions 239
Missouri 240
Moral and Social Science in Schools 429
More About Long Island and Rapid Transit 323
Manning, Maud, "Dust on Your Glasses" 357
Mode of Inflicting the Death Penalty, J. H. Packard, M.D. 360
Medical Jurisprudence of the Romans, Max F. Eller, Esq. 400
Mauritius Health Reports 424
Moral Culture, E. O. Haven, D.D. 455
Massachusetts State Board of Health, T. P. C. 500
Nassau 11
Notes to Dr. Van Bibber's Paper on Ventilation 185
New Fruits of Promise 220
New Haven Annual Health Report 237
Newport 238
Nil Desperandum, Mrs. E. O. Donnelly ... 252
Nutritive Value of Milk 255
New York Board of Health 233
National Quarantine 316
New York Nuisances 321
Newtown Creek Nuisances 414
New Baby 457
Nursing Sore Mouth 514
O'Sullivan, R. J., School Hygiene 1
Origin of Heart Disease 56
Opium-Eating 140
Pavements—Asphalt, A. N. Bell, M.D.178, 473
Present Position of Sanitary Science, E. Chadwick, C.B. 12, 49, 154, 224
Preventable Diseases and their Costs 42
Phillip's Cod Liver Oil 42
Parkes, E. A., With Portrait, T. P. Corbally 81
Providence Health Report 92
Pretty Well, Thank You 153
Pure Water, John Morris, M.D. 170
Pennsylvania Transactions 190
Powers of Sanitation, Edwin Chadwick .. 256
Pittsburgh Annual Report 285
Prevention of Disease, Insanity, Crime and Pauperism, N. Allen, M.D. 297
Packard, J. H., M.D., Mode of Inflicting the Death Penalty 360
Pure Milk by the French Method 503
Prime of Life 514
Palmer, Hon. O. H., Suicide Not Evidence of Insanity 504, 548
Public Parks, E. Seguin, M.D. 540
Prizes, Competitive, in Hygiene, T. P. C. 555
Quack Medicines 223
Rice 261
Removal 144
Rhode Island Registration Report 183
Relation of Law and Medicine to One Another, Cephas Brainard, Esq. 270
Relations Between Sewer Gas and Diphtheria, John W. Tripe, M.D. 446
Russell, J. B., M.D., Sewer Communications and Filth Diseases 354
School Hygiene, R. J. O'Sullivan 1
Shall not the Operating Theatres of Hospitals be Abolished? Stephen Smith .. 35
School Discipline in New York 37
Subscribers 42
San Francisco and her Mudsills 43
Sanitary Science, E. Chadwick, C.B. 49
State Charities; Cause and Best Treatment of Pauperism, Vice and Crime .. 71
Sewage Disposal for Villages and Small Towns, Practical Engineer 116
Sewage Disposal in Small Towns 140
Subscribers in Arrears 144
Scarlet Fever and Diphtheria in Brooklyn, F. H. Stuart, M.D. 175
Stuart, F. H., M.D., Scarlet Fever and Diphtheria in Brooklyn 175
State Medicine, J. L. Cabell, M.D. 180, 337
St. Louis Health Reports 188
State Medical Society Transactions 189
State Boards of Health—Connecticut and Kentucky 310
Sexton, S., Diseases of the Ear from Bathing 315
Sewer Communications and Filth Diseases, J. B. Russell, M.D. 354
Street Cleaning of Paris 395
Street Dirt—New York 412
Sunlight and Solarization in Health and Disease, E. C. Angell, M.D. 433
Sewer Gas and Diphtheria, John W. Tripe. 446
Seguin, E., M.D., Intervention of Physicians in Education 450
Seguin, E., M.D., Public Parks 540
Suicide Not Evidence of Insanity, Hon. O. H. Palmer 504, 548
Sanitary Condition of Paris, T. P. C. 538
Street Dirt: Its Value 412
Teachers, Importance of Good Health of.. 353
Teachers' Training School for Nurses 40
Tucker, J. W., Esq., Florida 126
Transactions of the Medical and Chirurgical Faculty of Maryland 191
Trader, John W., President of the Medical Association of Missouri 288
Tadlock, A. B., A.M., M.D., Hygiene in Geology and Agriculture 289
Tappenier, Dr., Contagiousness of Phthisis 353
Tripe, J. W., Sewer Gas and Diphtheria .. 446
Typhus Fever in St. Petersburg, T. P. C. 539
Unsanitary Condition of Public Schools in Brooklyn, A. N. Bell, M.D. 172
Unsanitary Condition of Public Schools in New York, Medico-Legal Society ... 212
Utica Health Reports 188
Ventilation of Cow-Stables 7
Ventilation, W. C. Van Bibber, M.D. 97, 145, 185
Vital Statistics. Mutual Life Insurance Company, New York 364
Vital Statistics, Brooklyn 372
Vienna Health Reports 424
Value of The Sanitarian 570
Why Should the Existing Worthless System of Registering Sickness be Longer Perpetuated? C. B. Fox, M.D. 57
Wisconsin Society Transactions 190
Water: Its Uses and Abuses, Pollutions and Dangers, Wm. Whitelaw, M.D. 209
Women's Hotel, Mrs. Matilda Fletcher 276
Waiting for Dysentery 373
Water Filters 374
Woodworth, J. M., M.D., Yellow Fever .. 378, 422, 468, 515, 564
What Constitutes Intemperance 406
Wash-Basins and Water-Closets, A. N. Bell 556
Whitelaw, Wm., Water, Its Uses and Abuses 209
Yeaman, Hon. George H., Medico-Legal Society Inaugural Address 29
Yellow Fever, John M. Woodworth, M.D. 378, 422, 468, 471, 515, 564
Young, Dr. E., Cost of Drinking Habits .. 456

INDEX TO VOL. VII.

	PAGE
American Public Health Association Proceedings.....1, 529,	561
American Public Health Association on Congressional Legislation Affecting the Public Health, Memorial of.....	87
Analysis of a Cigar.....	491
A New Disinfectant.....	245
A Sanitarian on the Scourge.....	420
Address of His Excellency, Gov. A. S. Marks, of Tenn.....	539
Address of Dr. E. M. Wight, Pres. Tenn. Medical Society.....	540
Address of His Honor, Mayor Thos. Kercheval.....	541
Advertising Quackery.....	121
Alimentation in Health and Disease, E. C. Angell, M.D.....	49
Allen, N., M.D., Education of Girls.....	385
American and English Physique, R. G. White.....	209
American Hams Abroad.....	48
American Medical Association.....	256
American Medical Editors' Association...	286
Angell, E. C., M.D., Alimentation in Health and Disease.....	49
Angell, G. T., Public Health Association..	126
An Outrage that the Sanitary Police should Investigate.....	470
Appearance of Yellow Fever in New Orleans in 1879.....	458
Atlanta's Hospitality.....	287
Auxiliary Sanitary Association of New Orleans.....379, 515,	562
Baltimore Board of Health Report.....	325
Bartlett, H. C., Ph.D., Chemistry of Dirt..	450
Bartlett, W. B., M.D., Doctors.....	112
Battershall, J. P., Ph.D., Hot Air Furnaces.	492
Beard, G. M., M.D., Writer's Cramp.....	299
Bell, A. N., M.D., Disinfection by Heat....	433
" " " Marine Hygiene.....	481
" " " Perils of Education in New York and Brooklyn.....	82
Bell, A. N., M.D., Quarantine.....	68
Bill Establishing a Department of Health.	90
Board of Experts on Yellow Fever and Cholera.....	132
Boards of Health.....	355
Bread, De Chaumont, Prof.....	125
Brooklyn.....	137
Brooklyn's Sewers, T. P. Corbally, M.D..	166
Carbolic Acid Let Down Easy.....	479
Chadwick, E., Requisite Attributions of a Minister of Health.....	59
Chaillé, State Medicine.....	264
Change of Diet.....	361
Chapman, E. N., Milk with Lime-Water..	155
Chemistry of Dirt, H. C. Bartlett.....	450
Chicago and Trichina.....	323
Christie, J., Threatened Epidemic of Plague.....	211
Cigar, Analysis of.....	491
Cinchona, Cultivation of.....	36
Cincinnati.....	474
City Scavenging of Boston, E. C. Clark....	542
Colorado State Board of Health Report....	322
Color-Blindness or Daltonism.....	37
Competitive Examinations, Prof. Huxley.	224
Congress International D'Hygiene.....	32
Contagious and Infectious Diseases.....	357

	PAGE
Corbally, T. P., M.D., Brooklyn's Sewers..	166
Cream Cheese and Old-tub Butter.....	510
Cultivation of Cinchona.....	36
Danger in Kerosene Oil.....	203
Day, H., Ozone in Relation to Health.....	205
Dayton Board of Health Report.....	478
Deaths from entering a Cesspool.....	464
De Chaumont, Prof., Bread.....	125
Dennison, Charles, M.D., Out-Door Life..	337
Dennis, L., M.D., Hatting.....	362
Detroit, Nuisance in.....	470
Difficulties of Public Health Administration.....	272
Diffusion of Heat, Prof. B. Stewart.....	204
Diphtheria.....	106
Diphtheria in Northern Vermont, E. Harris, M.D.....	353
Disinfectant, a New.....	245
Disinfection by heat, A. N. Bell, M.D.....	433
" " Instructions for....	456
Disposal of City Garbage at New Orleans, Rev. H. M. Thompson, D.D.....	545
Doctors, or Science of Thought Among the People, W. B. Bartlett, M.D.....	112
Doremus, Prof. R. O., Epidemics from a Chemical Standpoint.....	308
Drainage and Sewerage of Cities, Col. G. E. Waring, C.E.....	530
Dwelling Houses for Working People, Dr. E. Horneman.....	305
Education for the Kitchen.....	165
Education of Girls as Connected with their Growth and Physical Condition, N. Allen, M.D.....	385
Effect of Cold on Milk.....	175
Effect of Freezing on Yellow Fever.....	347
Epidemics from a Chemical Standpoint, R. O. Doremus, M.D.....	308
Eucalyptus.....	255
Exhibition of Sanitary Appliances.....	331
Facts Concerning Hot-Air Furnaces, J. P. Battershall, Ph.D.....	492
Feeble-Minded Children.....	478
Food and Physic.....	514
Garden City.....	182
Garden City Produce and Farmers' Club..	230
Georgia's Necessity, W. A. Love, M.D....	469
Getting up a Relish.....	496
Glycerine in Beer.....	37
Governor Robinson's Lesson to New York and Brooklyn Boards of Health on Cow Stables.....	138
Hard vs. Soft Water, R. S. Nailor, M.D....	496
Harmonizing Quarantine Efforts.....	525
Harris, E., M.D., Diphtheria in Northern Vermont.....	353
Hatting, L. Dennis, M.D.....	362
Healthy Country Homes and Cheap Farm lands.....	181
Heat, Diffusion of, Professor B. Stewart..	204
Hitchcock, Prof. E., M.D., Physical Education in Amherst College.....	218
How Typhoid Fever is Propagated.....	292
Horneman, Dr. E., Dwelling Houses for Working People.....	305
Huxley on Industrial Education.....	346
Huxley, Prof., Competitive Examination.	224
Illinois State Board of Health Report.....	320
Impurity of Well Water.....	476

INDEX.

	PAGE
Industrial Education	346
Inspection of All Vessels	423
Inspection of Markets and Abattoirs	35
Instructions for Disinfection	456
Instruments, To Clean	36
Inunction, H. G. Knaggs	122
Is Flower-Making Injurious to Health?	203
Jones, Prof. Jos., Origin of Yellow Fever Epidemic in New Orleans, 1878	246
Kerosene Oil, Danger in	203
Knaggs, H. G., M.D., F.L.S., Inunction	122
Labor as a Form of Athletic Exercise, F. L. Oswald	210
Leeds, L. W., Observations of a Sanitary Engineer in Paris	163
Liernur's New System for Keeping Cities Clean, O. R. Laung, M.D.	396
Limitation and Prevention of Epidemic Diseases, T. F. Rochester, M.D.	289
LITERATURE:	
Air and Moisture on Shipboard	237
American Architect	384
American Health Primers	331
American Medical Association, Vol. XXIX	233
American Quarterly Microscopic Journal	240
Animal Magnetism	334
Annual Reports of the Supervising Surgeon-General, U. S. M. Hospital Service, 1876-1877	44
Bertha Meyer's Aids to Family Government	332
Beware of Strong Drink	429
Buried Millions	383
Climate of Florida	96
Columbian Institute	93
Commercial Products of the Sea	237
Connecticut State Board of Health Report	234
Constituents of Climate	96
Dangers to Health	429
D. C. Health Report	186
Diseases of the Peritoneum	333
Duhring's Atlas of Skin Diseases, Part 5	332
Duty of the Church	144
Etiology of Intemperance	47
Fifth Annual Report of State Board of Health of Michigan	141
Frerich's Diseases of the Liver	333
Gynecological Transactions, Vol. III	333
Handbook of Nursing	95
Health and How to Promote it	149
Health Primers	141
Hints on House Drainage	427
Hints on Obstetric Procedure	429
Hygiene of the Brain	95
Hypodermic Injection of Morphia	527
Identification of the Human Skeleton	420
Inebriety—Nature and Treatment of	429
International Review	96
Manual of the Principles and Practice of Surgery	525
Medical Register	334
Naval Hygiene	188
N. J. State Board of Health Report	235
Notes on Yellow Fever Epidemic at Hickman, Ky	567
Our Domestic Poisons	523
Our Exchanges	189, 238, 335, 384
Plans for Poor Houses	334
Posological Tables	383
Physician's Day Book	571
Physician's Visiting List	571
Poisonous Dyes	526
Report on the Health of Children in the Oneida Community	46
Report of the St. Louis Medial Society on Yellow Fever	563
Report of the U. S. Commissioner of Agriculture	236
Sanitary Engineering	93
Sanitary Record	383
School Garden	429
Spermatorrhœa	333
Temperaments	94
Trans. Medical Society of Penna	427
Trans. of Med. Soc. of Tenn	525
Trans. of Med. Soc. of West Virginia	527
Trans. of Medical Society of N. J.	332
Trans. of American Ophthalmological Society	428
Treatise on the Horse and his Diseases	333
Vest-Pocket Anatomist	91
Wines of the Bible	47
Wood's Library of Standard Authors	238
Yellow Fever a Nautical Disease	563
Local Causes of Yellow Fever	319
London Dustmen	202
Longevity of Millers	374
Longevity of the Hebrews	520
Long Island City Stenches	313
Loss of Life on Steamboats	335
Louisiana State Board of Health	319
Love, W. A., M.D., Georgia's Necessity	460
Malarial Heart Disease	36
Markets and Abattoirs, Inspection of	33
Marine Hospital Service Bulletin	330
Marine Hospital Service Bulletin Reports, U. S. S. Plymouth	232
Marine Hygiene and the Prevention of Epidemic Diseases by Commerce, A. N. Bell, M.D.	491
Massachusetts State Board of Health, 1879	425
Medical Society of the State of New York, Meeting of	139
Medical Witnesses	266
Medico-Legal Society Proceedings	24
" " " Officers and Trustees, 1879	30
Memorial of American Public Health Association on Congressional Legislation Affecting the Public Health	87
Memphis	563
Milk with Lime Water, E. N. Chapman	155
Milwaukee Health Report	473
Minnesota State Board of Health, 1879	472
Minor, Jas. Munro, Obituary of	225
Modern Boards of Health, Prof. Brewer	241
Mortality in the Spanish Army	36
Mortality Statistics, 42, 91, 135, 184, 231, 288, 381, 430, 480, 524,	560
Municipal Sanitation, E. G. Janeway, M.D.	550
National Board of Health	176
" " "	182
" " "	230
" " " Law	357
" " " Quarantine	373
" " " *Bulletin*	380
" " " Circular to Health Authorities	408
National Health Legislation on Trial	501
National Medical Library, R. W. Mitchell	529
N. Wiggins, and others, Our Public Schools	300
New Haven Board of Health Report	327
New Orleans in 1879	458, 522
New Orleans Auxiliary Sanitary Association	379, 515, 562
Newport, R. I., Dangers Connected Therewith	228
New Protective Principle in Sanitation, H. R. Storer, M.D.	97
New York Tenement Houses, H. E. P.	107
" " Vital Statistics	183
Novel Method of Estimating the Constituents of Cereals	449
Obituary of J. M. Woodworth, M.D.	186

	PAGE
Obituary of J. M. Minor, M.D.	215
Observations of a Sanitary Engineer in Paris, L. W. Leeds	163
Ocean's Death Traps	345
On Rotting Wood, Prof. W. H. Brewer	551
Origin of the Yellow Fever Epidemic in New Orleans, 1878, J. Jones, M.D.	246
Oscanyan, Turkish Testimony on Turkish Tellaks and Hammams in New York	436
Oswald, Dr. F. L., Labor as a Form of Athletic Exercise	210
Our Public Schools, Drs. Newell, Wiggins, Anthony and others	300
Out-Door Life, Charles Denison, M.D.	337
Ozone in Relation to Health, H. Day, M.D.	205
Palmer, Hon O. H., Suicide not Evidence of Insanity	24
Parkes' Memorial Fund	131
Perils of Education in New York and Brooklyn, A. N. Bell, M.D.	82
Physical Education in Amherst College, E. Hitchcock, M.D.	218
Plague, The	137
Do.	183
Do. in Russia, M. Schuppert, M.D.	487
Poisonous Clothing	404
Pot au Feu	513
Practical Sanitation	405
Proceedings of the Board of Experts	90
Propositions of Executive Committee	563
Public Health Abroad, T. P. C.	31
Public Health Administration, New York.	193
Public Health Association, G. T. Angell	126
Quarantine, A. N. Bell, M.D.	68
Quarantine Regulations, National Board of Health	375
Registration Reports	137
Relations of the Medical Profession to the State, D. B. St. J. Roosa, M.D.	145
Requisite Attributions of a Minister of Health, E. Chadwick, C.B	59
Rhode Island State Board of Health	479
Rochester	475
Rochester, Prof. T. F., M.D., Limitation and Prevention of Epidemic Diseases.	289
Roosa, D. B. St. J., M.D., Relations of the Medical Profession to the State	145
Sanitary Council of Mississippi Valley	287
Sanitarian on the Scourge	420
Sanitary Legislation	37
Savannah	422, 447
Savory Beef, Double Duty for Ship's Water Closets	427
School-Room Smothering in New York	186
Scourge, a Sanitarian on the	420
Schuppert, Dr M., The Pest or Plague	487
Societé Francais D'Hygiène, T. P. C.	31
Societé Italiana D'Igiene, T. P. C.	33
Soup	486
Spanked	162
Sporadic Diseases	427
Stamping Out Yellow Fever	471
Starvation in the Arctic Seas	500
State Medicine, Prof. Chaillé	264
Stewart, Professor, Diffusion of Heat	204
St. Louis Board of Health Report	328
Storer, Dr. H. R., New Protective Principle in Sanitation	97
Storm-Bound in a Sanitarium	38
Suicide not Evidence of Insanity. Hon. O. H. Palmer	24
Tenement House Question	226
Tenement Houses of New York	177
Threatened Epidemic of Plague, Jos. Christie, M.D.	211
To Attain Long Life	344
To Clean Instruments	36
Toledo Health Report	478
Town Pump	377
Town Pump, More About the	426
Turkish Testimony on Turkish Tellaks and Hammams in New York	406
Unbolted Flour	511
Unsanitary Condition of Savannah	447
Uses of the Potato	497
Vicksburg	563
Vital Statistics of Amherst College	223
Well Water Impurities	476
What Do You Drink?	245
White, R. G., M.D., American and English Physique	209
Wisconsin State Board of Health, 1879	423
Woodworth, J. M., M.D., Obituary of	186
Writers' Cramp, G. M. Beard, M.D.	299
Yellow Fever, Abstract Surg.-Gen. Woodworth's Report	41
Yellow Fever in New Orleans, 1879	458
" " Effect of Freezing on	347
" " Epidemic in New Orleans in 1878, Origin of, Jos. Jones, M.D.	246
Yellow Fever, Local Causes of	319
" " Stamping out	471

INDEX TO VOL. VIII.

	PAGE
Adulteration of Food, C. C. Yemans, M.D.	346
American Medical Association Arrangements	137, 278
American Medical Association Proceedings	294
American Medical Association, Value of, to the Profession, L. A. Sayre, M.D.	295
American Public Health Association, Announcement	473, 562
Americans and Their Civilization a Product of Climate, C. H. Young	204
Apollinaris Water	124
Association for Improving Condition of the Poor, Editorial	181
Association of Medical Editors	293
Aurora Health Report	566
Artesian Well Water	567
Auxiliary Sanitary Association, New Orleans	136
Adulteration of Soaps	426
Altitude, Some of the Effects of, on Health	90
Analysis of Higgins' German Laundry Soap	377
Allen, Nathan, M.D., Laws of Inheritance.	385
Are there Diseases of Acclimation? A. Fernandez-Caro	433
Baking Powders, H. A. Mott, Jr., Ph.D., E.M.	263
Benefits of Sanitation, Chas. Kelly, M.D.	357
Bartlett, W. R., M.D., Individual Work as Related to Health Boards	247
Bathing	567
Bayles, J. C., Old Oaken Bucket	38
Bell, A. N., M.D., Quarantine of the Future.	82
" " Inspection of Steamboats and other Vessels	102
Bell, A. N., M.D., National Board of Health and Its Adversaries	221
Bell, A. N., M.D., Unsanitary Engineering and Architecture	304
Better than Sewerage? Richard McSherry, M.D.	481
Billings, J. S., M.D., U.S.A., Conflicting Theories of Quarantine	81
Billings, J. S., M.D., U.S.A., National Board of Health	299
Bicycles	229
Bill for State Board of Health of N. Y.	136
Bintliff, Gen. James, Homes for the People	445
Boston Sewage Works	495
Boyland, G. H., M.D., Isthmian Salubrity and Panama Canal	442
Brewer, W. H., Relations of Modern Health Boards to Material Prosperity	491
Cattle Diseases, Alex. I. Murray, V.S.	161
Camps and Depopulation at Memphis, I. F. Cameron	97
Cabell, J. L., National Board of Health	1
Campbell, H. F., M.D., Yellow Fever Quarantine of the Future	72
Construction and Management of Privies	464
Children's Hats	497
Children, Society for Prevention of Cruelty to	227
Corbally, T. P., M.D., Tuberculosis as an Infectious Disease	460
Charleston Water Supply, M. Michael M.D.	241
Crime, Society for Prevention of	227
Court Rooms, New York	223
Cosmetics, C. C. Yemans, M.D.	345
Care for the Minister	203
Cesspoll Poisoning	565
Cleveland Health Report	566
City of Destruction, R. C. Kedzie, M.D.	311
Craig, W. F., C.E., Sewerage System of Detroit	201
Chamberlain, C. W., M.D., Vital Statistics	349
Cotton as a Fomite of Yellow Fever, J. D. Plunkett, M.D.	49
"Common" Schools in Brooklyn	341
Choppin, S., M.D., Enforcement of Quarantine	80
Choppin, S., M.D., Non-Intercourse Quarantine	108
Cochran, Jerome, M.D., Problems of Yellow Fever	81
Conflicting Theories of Quarantine, J. S. Billings, M. D., U.S.A.	81
Cook's Grand Excursions to Europe	138
"Cups, Dr.," An Old Doctor's Story	113
Dake, J. P., M.D., Isolation in Yellow Fever	70
Dandgers of Childhood, Horatio Donkin, M.B.	538
Dayton Board of Health Report	565
Dean, R.C., M.D., U.S.N., U.S.S. Plymouth	550
Detroit Board of Health?	228
Defilements of New York Harbor, E. F. Peck, M.D.	425
Drew, E. S., M.D., First Case of Yellow Fever in New Orleans, 1878.	35
Drinking Water Abroad, Sir H. Thompson.	123
" " Contamination of, V. C. Vaughan, M.D.	156
De Lesseps Canal	465
Drink, the Cost of	485
Disinfection—Massachusetts State Board of Health	216
Donkin, Horatio, M.B., Dangers of Childhood	538
Dry Wells and Their Dangers	427
Enforcement of Quarantine, S. H. Choppin, M.D.	80
Epidemics, Sir Joseph Fayer K.C.S.I., etc.	391
"Essentials" For the Protection of the Public Health in Brooklyn	376
Experienced Advertisers	93
Fallacious Notions Concerning Stationary Death-rate	37
Falligant, L. A., M.D., Mild Winter as Influencing the Coming Summer	170
Fleming, W. L., Physiology of the Turkish Bath	207
Flour versus Flesh	126
Female Crusoe, A. B. Stuart, M.D.	400
Fayer, Sir Joseph, Epidemics	391
Fernandez-Caro, Are there Diseases of Acclimation?	433
Flowers and Vines	519
Garden City	230
Gas-pipes, Leaks in	217
Germ Disease Theory, Koch	246
Gihon, A. L., M.D., U.S.N., Venereal Diseases	23, 316, 377
Hard Times	91
Havana Commission, The, Editorial	274
Health, Effects of Latitude on	90
Herrick, D. S., M.D., Yellow Fever in New Orleans, 1879	80

PAGE

Higgins' German Laundry Soap..... 276
Hargis, R. B. S., M.D., Nautical Origin of Yellow Fever..... 175
Homes for the People, Gen. Jas. Bintliff... 445
Horneman, Dr. E., Prevention of Syphilis. 407
How to Avoid Yellow Fever, Dr. Don Victor Perez..... 529
How Venice is Supplied with Fresh Water, G. E. Waring, Jr..... 215
Homœopathy in the United States..... 503
Humorous Physiology..... 496
Individual Work as Related to Health Boards, W. R. Bartlett..... 247
Inspection of Steamboats and Other Vessels, A. N. Bell, M.D..... 102
Invalids..... 138
Institute of Heredity..... 428
International Sanitary Congress at Turin..... 427
International Sanitary Conference..... 498
Isthmian Salubrity and the Panama Canal, G. H. Boyland, M.D..... 442
James, E. E., States' Rights and a National Quarantine..... 103
Jennings, R. G., M.D., Quarantine..... 62
Jennison, Mrs. Wm., Training Schools of Cookery..... 313
Juvenile Smokers..... 326
Kedzie, R. C., M.D., Temperature of Living Rooms..... 301
Kedzie, R. C., M.D., City of Destruction... 311
Kelly, Charles, M.D., Benefits of Sanitation..... 357
Kidder, J.H., M.D., U.S.N., U.S.S. *Plymouth*..... 550
Kitchen Garbage Disposal, E. F. Peck..... 517
LITERATURE:
America, a Weekly Journal..... 144
American Health Primers, Presley Blakiston's..... 335
Astronomy in Rochester..... 575
Atlantic Monthly..... 571
Baltimore Health Report, 1879..... 285
Bible Hygiene..... 474
Brain and Mind, Drayton and McNeill..... 383
Bright's Disease..... 380
Bruxelle's Vital Statistics..... 278
Buck's Hygiene and Public Health.. 428
Bureau of Education..... 282
Camping Out in Colorado..... 573
Carlsbad's Healing Agents, Kraus.. 431
California State Board of Health.... 232
Census, The..... 527
Cinchona Cure for Intemperance.. 479
Corfield on Health..... 477
Common Mind Troubles, Granville. 335
Counsel to Parents in Education of their Children..... 240
Dayton Board of Health Report..... 47
Double Crural Murmur..... 380
Drainage and Underdrainage, Scelye. 572
Duhring's Atlas of Skin Diseases..48, 522
Dunglison's School Physiology..... 524
Eads' Ship Railway..... 572
Exemption from Vaccination..... 524
Foreign Exchanges..... 190
Foreign Bodies in Surgical Practice. 383
Frankland's Water Analysis..... 329
Germ, The..... 477
Hancock, Gardner..... 526
Handbook of Physical Diagnosis, Guttmann'... 378
Harper's Magazine..... 570
Health and Healthy Homes, Wilson. 384
Healthy Infant, Dix..... 329
Health Primers, Appleton & Co.'s.. 480
How to Educate the Feelings..... 239
How to Live in Summer, Lewis.... 480
Hygiene and Education of Infants.. 239
Hygiene and Medical Reports of the Navy..... 236
Hydrate of Chloral, Kane..... 287
Hair, The, Leonard..... 287
Index Medicus..... 119
Index Catalogue, Billings..... 522
Influence of School Life upon the Eyesight, Conklin..... 527
Inebriates' Home, Fort Hamilton.. 249
Johnston's Chemistry..... 478
Juvenile Temperance Reciter..... 287
Kentucky State Board of Health.... 43
Key to Ghostism..... 239
Lancet, The..... 142
Leonard's Dose Book..... 480
Management of Children Hall..... 431
Memphis, First Annual Report of the Board of Health, 1879..... 326
Medical Profession and Alcohol..... 330
Medical Register of New York and Vicinity..... 342
Mexican Pompeii..... 571
Ministry of Health, Richardson.... 184
Morphia Hypodermically, Kane..... 247
Muscle Beating, Klemm..... 477
Nashville Board of Health..... 231
National Quarterly Review..... 190
National Temerance Society Report. 174
Nature's Hygiene, Kingzette..... 476
Nervous Exhaustion, or Neurosthenia, Beard..... 286
Popular Science Monthly..... 334
Practitioners' Reference Book, Dunglison..... 432
Playter's Physiology..... 48
Plumber and Sanitary Engineer..... 143
Proceedings of Association of Officers of Institutions for Idiotic and Feeble-Minded Persons.... 311
Progressive Ship-Builder, Griffiths 47
Prospective Advantages of Baltimore as a Medical Centre, Van Bibber. 479
Prevention and Cure of Consumption Work..... 329
Public Health and Sanitary Reform, a Sermon..... 475
Quack Doctors and Newspapers..... 575
Quarantine of South Carolina..... 228
Quarterly Epitome of Practical Medicine and Surgery..... 325
Retirement of Drs Bowditch and Farr..... 139
Richet's Physiology and Histology. 48
Richmond (Va.) Board of Health Report..... 47
Rowell's Newspaper Directory..... 526
Rocky Mountain Health Resorts, Denison..... 328
Routh on Infant Feeding..... 142
Rumbold's Hygiene of Catarrh..... 525
San Francisco Health Report..... 330
Sanitary Drainage, Converse..... 238
" " of Houses and Towns, G. E. Waring, Jr..... 239
Sanitary Engineering, Wm Cain, C.E..... 190
School-Houses, Chittenden..... 288
Savage's Female Pelvic Organs..... 478
Scribner's..... 524
Sewers and Drains for Populous Districts..... 282
Slight Ailments, Beale..... 570
Spiritual Songs, Robinson..... 431
St. Nicholas..... 525
State Board of Health of California. 232
" " " Connecticut..... 230
State Board of Health of New Jersey..... 285
State Board of Health of Wisconsin. 381
Summer Reading—Popular Magazines..... 384

PAGE

Surgeon-General Barnes' Annual Report, 1879 238
Tamins' Artificial Disinfection 525
Toxæmic Diseases and their Treatment 480
Trans. Medical Society of Georgia .. 140
" Philadelphia College of Physicians 143
Trans. Connecticut Medical Society, 1879–'80 ..... 185, 525
Trans. Wisconsin Medical Society, 1879–'80 186
Trans. Louisiana Medical Society, 1879 188
Trans. Kansas Medical Society, 1879. 189
" Maryland Medical Society, 1879–'80 ..... 330, 523
Trans. Pennsylvania Medical Society, 1879 331
Trans. Arkansas Medical Society, 1879 332
Trans. Tennessee Medical Society, 1879 ..... 332, 574
Trans. Virginia Medical Society, 1879. 332
Trans. South Carolina Medical Society, 1879 334
Truth about Vaccination, Hart 432
Trans. Georgia Medical Association. 573
Utica Health Report 331
Vaseline 378
Vegetenarianism. Cure for Intemperance, Fowler 286
Venereal Diseases, Keyes 383
Veterinary Science 380
Wood's Library of Standard Medical Authors, 1880 ..... 383, 478
London Fogs, Singular Explanation of 399
Laws of Inheritance, Nathan Allen M.D ... 385
Latitude, Effects of, on Health 90
Leaks in Gas Pipes 217
Long Beach—The New Summer Resort, Editorial 321
Lord, Hon. H. W., Sanitary Rewards and Punishments 193
Lunacy, Increase of in Great Britain 34
Light in the Public Schools, J. C. Lundy .. 163
Lyster, H. F., Pulmonary Consumption .. 168
Lundy, J. C., Light in the Public Schools. 163
" M.D's." 137
Marine Hospital Service 284
Mark Twain on Babies 92
McSherry, Rich'd, M.D., Plea for Sound Manhood and Womanhood 337
McSherry, Rich'd, M.D., Better than Sewerage? 481, 390
Man Destroys—Nature Economizes 390
Maxon, E. R., M.D., Preventable Diseases. 454
May not Yellow Fever Originate in the United States? A. A. Woodhull, M.D., U.S.A. 66
McLeod, Duncan, M.D., Ventilation of Dwellings and Sleeping Rooms 309
Memphis, Redemption of, Editorial 41
" Yellow Fever Epidemic, G. B. Thornton 53
Memphis, Drinking Water, C. S. Smart, M.D., U.S.A. 83
Memphis, Healthy Condition of 136
" and her Jubilee 501
Mortality Statistics 42, 96, 132, 180, 182, 220, 273, 519, 521, 562, 568
Mortality Among Seaman 490
Minnesota State Board of Health 127
Menu ... 129, 177, 218, 270, 317, 370, 415, 458, 507, 560
Mild Winter as Influencing the Coming Summer, L. A. Falligant, M.D 170
Michel, M., Charleston Water Supply 241
" " Sewage Disposal .. 486
Michigan Sanitary Convention ... 136, 160, 303, 342

PAGE

Milk, G. A. Watkins 313
Milk as a cause of Tuberculosis 549
Mott, H. A., Jr., Ph.D., E.M., Baking Powders 263
Murray, A. J., vs. Cattle Diseases 161
Monument to Claude Bernard 428
Modern Health Boards' Relations to Material Prosperity, W. H. Brewer 491
National Board of Health, J. L. Cabell 1
" " J. S. Billings .. 299
" " A. P. H., Association 78
National Board of Health, Work of 107
" " and its Adversaries, Editorial 221
Naval Hygiene Report, P. S. Wales, Surgeon-General U.S.N. 119
Nervous Exhaustion, W. H. Rouse, M.D ... 309
Nevins, J. Berbeck, M.D., Protection from Venereal Diseases 252
New Haven Health Report, 1879 516
New York City Court Rooms 226
New Orleans, Responsibility for Obstructing Commerce 462
New Safety-Lamp 527
Ocean Travel 277
"Odor of Sanctity" 414
Officers Elect, A. P. H. Association 112
Old Oaken Bucket, J. C. Bayles 38
Old Doctor's Story, "Dr. Cups" 113
"Open Air" Carpet Cleaning 324
Organisms in Ice from Stagnant Water 372
Parson's, Ralph L., Private Asylum 462
Peck, E. F., Defilements of New York Harbor 425
Peck, E. F., Kitchen Garbage Disposal 517
Perils of the Ship 277
Plunkett, J. D., M.D., Cotton as a Fomite. 49
Potash Soap 518
Pulmonary Consumption, H. F. Lyster ... 168
Poor, The, Association for Improving Condition of 181
Perez Dr. Don Victor—How to Avoid Yellow Fever 529
Princeton College—Neglected Drainage and Bad Plumbing a Dispensation of Providence! Editorial 373
Perseverance and Health 115
Philadelphia Board of Health Report 94
" Sewerage, Jno. E. Addicks ... 362
Physical Education 356
Physiology of Turkish Bath, W. J. Fleming, M.B. 209
Plea for Sound Manhood and Womahhood, Rich'd McSherry, M.D 337
Population of Africa 122
Preventable Diseases, E. R. Maxon, M.D .. 454
Prescott, A. B., Water for Household Uses. 310
Problems of Yellow Fever, Jerome Cochrane, M.D 81
Protection from Venereal Diseases, A. L. Gihon, M.D, U.S.N. 23, 316, 377
Protection from Venereal Diseases, J. Berbeck Nevins, M.D 252
Protection from Veneral Diseases, E. Horneman, M.D 407
Quarantine of the Future, H. F. Campbell, M.D 72
Quarantine of the Future, A. N. Bell 82
" Non-Intercourse, S. Choppin .. 108
" and Marine Hygiene, Editorial. 133
" New York, S. O. Vanderpoel .. 116
" Shot Gun, Example of 155
" Conflicting Theories of, J. S. Billings, M.D., U.S.A. 81
Quinine Production in India 548
Railroads in Epidemics 145
Remedy for Mildew 441
Removal of Strong Odors from the Hands. 315
Rhode Island State Board of Health 465
Rouse, W. H., M.D., Nervous Exhaustion. 309

	PAGE
Richmond, Va., Health Report, 1879	471
Reading, Pa., Health Report, 1879	472
Sanitary Council, Mississippi Valley	564
Sanitary Rewards and Punishments, H. W. Lord	193
Sanitary Management of Schools	137
Sanitary Science recognized by New York Aldermen	182
Sewage Disposal in Charleston, M. Michel	486
Sewage, How to Dispose of	89
Sewerage System of Detroit, W. F. Craig	201
Shall New York Have a State Board of Health? Editorial	39
States Rights and a National Quarantine, E. E. James	103
Sharp, Th. R., Receiver, L. I. Railroad	182
School Hygiene, J. M. B. Sill	342
Smart, C. S., M.D., U.S.A., Memphis Drinking Water	83
Sill, J. M. B., School Hygiene	342
Soil Drainage, Savannah Drainage Commissioners	85
Soap	228, 276, 325, 426, 472, 518, 561
Society for Prevention of Cruelty to Children	227
Society for the Prevention of Crime	227
State Board of Health of New York	276, 423
" " " Act to Establish	259
Sayre, L. A., M.D., Value of a Med. Association to the Medical Profession	295
Stuart, A. B., M.D., A Female Crusoe	400
State Medicine in Massachusetts, Editorial Review	509
State Medicine in Louisiana, Editorial Review	514
Tenement House Murderers of New York, Editorial	225
Temperature of Living Rooms, R. C. Kedzie, M.D.	301
Thornton, G. B., M.D., Memphis Yellow Fever Epidemic	53
Tobacco	559
Training Schools of Cookery, Mrs. Wm. Jennison	313
Tuberculosis as an Infectious Disease, T. P. Corbally, M.D.	460
Tyner, T. J., Etiology of Yellow Fever	68
Typhoid Fever	95
U.S.S. *Plymouth* — Report of Sanitary Board	550
Unsanitary Engineering and Architecture, A. N. Bell, M.D.	374
Venice—How Supplied with Fresh Water G. E. Waring, Jr.	215
Vanderpoel, S. O., M.D., Quarantine of New York	116
Vaughan, V. C., M.D., Contamination of Drinking Water	156
Vaseline	187
Ventilation of Dwellings and Sleeping Rooms, Duncan McLeod, M.D.	308
Venereal Disease, Protection from, A. L. Gihon, M.D., U.S.N.	22, 316, 377
Venereal Diseases, Protection from, J. Berbeck Nevins	252
Venereal Diseases, Protection from, Dr. E Horneman	407
Vital Statistics, C. W. Chamberlain, M.D.	349
Vital Statistics of New York	43
Washington Health Report, 1879	429
Water for Household Uses, A. B. Prescott	510
What is in a Name?—Plumber and Sanitary Engineer	483
What Kills	406
Widows and Orphans, Distribution of Money to	106
Wilson, T.D., N.C., U.S.N., U.S.S. *Plymouth*	550
Working-Women's Protective Union	226
Work of the National Board of Health	107
Woodhull, A. A., M.D., U.S.A., May not Yellow Fever Originate in U. S.?	66
Watkins, G. A., Milk	313
Wilhelm's Quelle Mineral Water	325
Women as School Officers	368
Whining in Prayer	411
Yellow Fever, First Case of, in New Orleans, 1875, E. S. Drew, M.D.	35
Yellow Fever, Etiology of, in Memphis, T. J. Tyner, M.D.	68
Yellow Fever, Isolation in, J. P. Dake	70
" " in New Orleans, 1879, D. S. Herrick, M.D.	80
Yellow Fever, Nautical Origin of, R. B. S. Hargis, M.D.	175
Yellow Fever in New York and New Orleans	376
Yellow Fever, Editorial	417
Yemans, C. C., M.D., Cosmetics	345
" " Adulteration of Food	346
Young, C. H., Americans and their Civilization a Product of Climate	204

2 gal
254+